International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 08 Issue: 02 | Feb 2021 www.irjet.net p-ISSN: 2395-0072

"APPLICATION OF FACE RECOGNITION FOR ATTENDANCE SYSTEM"

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Abstract - *This paper represents the prototype of an automated Online Biometric-enabled Class Attendance Register System (OBCARS). The system is designed and developed to address the obstacles of misplaced and/or torn attendance register paper sheets in various classrooms in Higher Educational Institutions. The system is built to provide an efficient and effective class attendance tracking method that avoids attendance marking impersonation among students, and simplify students' attendance record computation. Biometric appreciation comprises alike, within an open-mindedness of calculation, of pragmatic biometric behaviors on the contrary of formerly poised data for a focus. Estimated identical is obligatory due to the dissimilarities in biological characteristics, deeds both within and among persons. On the basis of student's presence in the class, the attendance will be generated by the system. The face of the student is recognized and it saves the response in database automatically by the system.*

Key Words **: Face Recognition, Attendance system and Bio-metric, etc.**

1.INTRODUCTION:

Face recognition is one of the few biometric methods that includes the merits of both accuracy and low intrusiveness. Due to this reason since the 70's, face recognition has gained attention of researchers in fields from security and image processing to computer vision. Face recognition is considered useful in multimedia information processing areas. Traditionally, attendances are taken manually in the class room using attendance registers given to the faculty members. But it is a time consuming event. Also, it is very difficult to verify students one by one in a large classroom environment, whether they are present or not. The proposed system demonstrates how face recognition is used for taking attendance of a student automatically using Java, how to store the faces in the database and how to retrieve the absent list.

It determines if the image of the face of any given person matches any of the face images stored in a database. This problem is challenging to resolve automatically due to the changes that various factors, such as facial expression, aging and even lighting, can cause on the image. Amongst different biometric techniques facial recognition may be unreliable but it has several advantages over the others. This system is proven to be useful in various areas such as security and access control, forensic medicine, police controls and in attendance management system. The various techniques for marking attendance are:

1) Signature based System
2) Fingerprint based System
3) Iris Recognition
4) RFID based System
5) Face Recognition

Amongst the above techniques, Face Recognition is natural, easy to use and does not require aid from the test subject.. It is a series of several related problems which are solved step by step:

1) To capture a picture and discern all the faces in it.

2) Concentrate on one face at a time and understand that even if a face is turned in a strange direction or in bad lighting, it is still the same person.

3) Determine various unique features of the face that can help in distinguishing it from the face of any other person. These characteristics can be the size eyes, nose, length of face, skin colour, etc .

4) Compare these distinctive features of that face to all the faces of people we already know to find out the person's name. Human brain is made to do all of this automatically and instantaneously. Computers are not capable of such kind of high-level generalization, so we need to teach or program each step of face recognition separately to the system. Face recognition system is further divided into two categories i.e. verification and identification. Face verification is a 1:1 match which compares a face image against a template face images, whose identity is being claimed. Contradictory, face identification is a 1:N problem that compares a query face image.

2.LITERATURE SURVEY

1.Aadhaar Based Biometric Attendance System Using Wireless Fingerprint Terminals.

Narra Dhanalakshmi; Saketi Goutham Kumar; Y Padma Sai.

Published in: 2017 IEEE 7th International Advance Computing Conference (IACC)

In this paper, two different approaches are proposed to authenticate the captured fingerprint in the process of verification. The first approach uses data base which is created by the organization itself and the second approach uses the Aadhaar Central Identification Repository (CIDR). Wireless fingerprint terminals are used to capture and store the attendance records of the students in the device data base and updating them to the server data base. SMS Alerts are sent to students and their parents in case of their irregularity, absence or shortage of attendance.

Limitation: Aadhar Data may not be available and also fingerprint bases system has its own drawbacks.

2. A web enabled secured system for attendance monitoring and real time location tracking using Biometric and Radio Frequency Identification (RFID) technology.

Srinidhi MB ; Romil Roy

Published in: 2015 International Conference on Computer Communication and Informatics (ICCCI)

The main idea of this paper is to built a safe and secure web based attendance monitoring system using Biometrics and Radio Frequency Identification (RFID) Technology based on multi-tier architecture, for both computers and smartphones.

Limitation: Students can exchange their RFID cards.

3.Real-Time Online Attendance System Based on Fingerprint and GPS in the Smartphone.

Lia Kamelia; Eki Ahmad Dzaki Hamidi; Wahvudin Darmalaksana; Afit Nugraha

Published in: 2018 4th International Conference on Wireless and Telematics (ICWT)

The purpose of the research is to develop an online presence system which is a combination of fingerprint modules and GPS. The ZFM-20 fingerprint module is used as the system's main input as well as a security tool as an entrance to get access to the entire system. To determine the user's location and sends it to the smartphone, GPS Module is used. Arduino module present in the system will send a text message to the parties concerned about the user's location data automatically.

Limitation: It is a fingerprint based system and has its own disadvantages.

4.Design and Implementation of a Student Attendance System Using Iris Biometric Recognition.

Kennedy O. Okokpujie; Etinosa Noma-Osaghae; Olatunji J. Okesola; Samuel N. John; Okonigene Robert.

Published in: 2017 International Conference on Computational Science and Computational Intelligence (CSCI)

In this paper, the iris of human eye is used as a biometric. After enrolling all attendees by storing their particulars along with their unique iris template, the designed system automatically took class attendance by capturing the eye

image of each attendee, recognizing the user's iris, and searching for a match in the database created.

Limitation: This system is not cost effective.

5.Development of an Online Biometric-enabled Class Attendance Register System.

Victor Oluwatobiloba Adeniji; Mfundo Shakes Scott; Nomnga Phumzile.

Published in: IST-Africa 2016 Conference Proceedings Paul Cunningham and Miriam Cunningham (Eds) IIMC International Information Management Corporation, 2016 ISBN: 978-1-905824-55-7.

In this paper, the system was designed to record attendances of students for both lectures and exams with aid of Fingerprint. Through the system, the attendance records of the students are managed online as Admin and Lecturers can view and modify the student's attendance data via Web browser.

Limitation: It is a Fingerprint based system which has its own disadvantages.

3.PROBLEM STATEMENT:

To develop a windows based prototype model for biometric attendance system using face recognition using python programming language.

OBJECTIVES:

1. To detect faces.

2. To mark attendance.

2. To check defaulter list.

4.MOTIVATION:

Recently, image processing which extracts useful information from a digital image plays a unique role in the advent of technological advancements. It focuses on two tasks i.e. improvement in pictorial information of human interpretation, loading of image data for storage, transmission and representation for autonomous machine perception. Also people have started the usage of image capturing devices never as before with the advent of smart phones and closed circuit television.

5.PROPOSED SYSTEM:

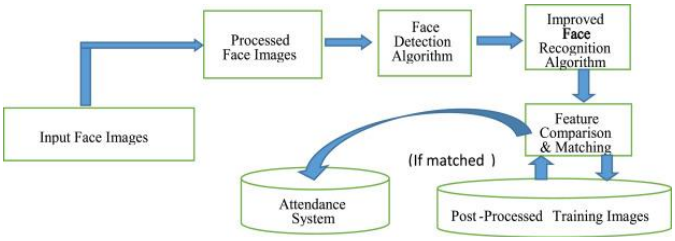

Fig.1: Proposed system architecture.

Proposed system is biometric attendance system using face recognition. Face detection has been extensively researched in past few decades. It is a specific case of object detection which determines the size of candidate faces in an image. It is a process of designing a system by giving input consisting of images that contains faces and then training a classifier to identify a face in an image. The main focus of this system is to decrease false positive rate thereby increasing accuracy.

6.ALGORITHM:

The main idea of Principal Component Analysis (PCA) is to reduce the dimensionality of a data set including of many variables that are related with each other, either heavily or lightly, while retaining the variation consisted in the dataset, up to the maximum extent. The same process is done by transforming the variables to a new set of variables, which are called as the principal components (or simply, the PCs) and are orthogonal, ordered in such a way that the retention of variation present in the original variables decreases as we move down in the order. Hence, the 1st principal component retains maximum variation that was present in the original components. The eigenvectors of a covariance matrix are the principal components, and hence they are orthogonal.

7.EXPECTED RESULTS:

1. Face Recognition
2. Marking Attendance
3. Defaulter Detection

8.ADVANTAGES:

1. Ease in maintaining attendance.
2. Reduced paper work.
3. Automatically operated and accurate.
4. Reliable and user friendly.
5. Increased productivity.

9.APPLICATIONS:

1. To verify identities in Government organizations.
2. Enterprises.
3. Attendance in Schools and colleges.
4. To detect fake entries at international borders.
5. Industries.

10.CONCLUSION & FUTURE WORK:

In this system we are going to implement an attendance system for a lecture, section or laboratory by which lecturer or teaching assistant can record students' attendance. It will save time and effort, especially if it is a lecture with huge number of students. Automated Attendance System has been envisioned for reducing the drawbacks in the traditional (manual) system.

This attendance system demonstrates the use of image processing techniques in classroom. This system can not only merely help in the attendance system, but also improve the goodwill of an institution.

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