

A SMART ATTENDANCE AUTOMATION AND MONITORING SYSTEM USING ENHANCED FACIAL RECOGNITION TECHNIQUES

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ABSTRACT: The main idea of this article is to provide a system where the presence of a student is known by using his face recognition id. The general motive is to improvise the existing register system and biometric system of fingerprint to face id. The face nodal points are noted and graphed using RFG. The graphed face is recorded, and when the person appears again in front of the camera his presence is noted and sent to the database and the attendance is uploaded. In the same way, if the management desired the whole bio of a person can be known by face id.

Introduction:

Scope of the system:

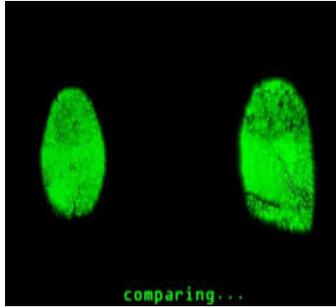
Science and technology go hand in hand to bring nourishing changes in daily life. The scope of this article is to use the improvements in biometric face recognition technology. The importance lies in the hands of live face capture system. The current procedures involving in attendance maintain tradition are fingerprint, maintaining a notebook register, **RFID** cards. These methods have many loopholes and can bring many confusions and Also, these systems are time prolonging. So here comes attendance automation with face recognition. Here we also have an advanced step where the face recognition idea fails for twins and triplets. Taking their case in hand, their deep face scan can sometime have similar results, so we take their iris scan which may bring some variations in results. Exact solution can be only known by further scientific researches and survey involving large number of people.

it identifies the card of the particular individual by radio frequency waves. The main problem in handling the RFID card is the radio frequency gets blocked when it comes in contact with metal and water in that case the card becomes unreadable. Also, the RFID card is expensive to repair in case of damage. The RFID has a risk to be get stolen, and any person having the card can get the access. In some case people can encourage buddy punch.

Coming to the case of fingerprints, the biometric sensor does not always read an individual fingerprint accurately, therefore could refuse a right employee. The fingerprint sensor does not consider the person's physical changes which can create trouble. In certain cases, an employee may have not place fingerprints in the correct spot or might have placed the right finger instead of left and vice versa., In that case, the machine refuses the access to right person. Secondly every person places his/her hands in the same sensor and it is not hygienically good. Therefore, this can spread germs. Consider a case of university minimum 10,000 people will enroll their presence. If in case of a city there may be a lakh people. So, the risk of spreading of germs is high.

Problem identification:

The existing system is the RFID card system or the biometric finger print system. The RFID is a card having a I-chip, the tags in the card contains the information electronically. When the card is scanned,



PROPOSED SYSTEM: FACE RECOGNISATION

Face id is permanent. In the beginning of 1970's the face identification was only 2d. 2d recognition was found by measuring the distance between two points in face. This involved a LPP graphing technique. For example: distance between eyes, the distance between nose and lips, the length of the nose etc. The main problem in 2d identification is that the nodal points' distance differs based on 4 factors:

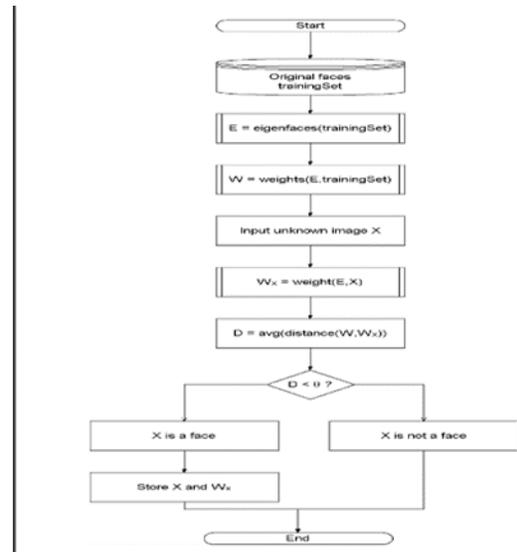
1. Ageing
2. pose
3. illuminations
4. emotions

(also, shortly know as a-pie). Then later came the 3d identification where the person's deep face was identified and recorded. The deep face of a person remains same in spite of a-pie problem. Even in complete darkness infrared rays are used to identify the deep face of a person.

In the beginning of the process, every students' face who are present in school must be recorded. The data must be recorded and stored in cloud. In the further coming sessions, the student must present their face near the camera. The live camera captures the persons' deepface and the recorded face must be compared with the stored data if the maximum match is found, the person gets his attendance uploaded. In case of twins, the iris scan will be very much useful. And the second step verification can be helpful in their cases.



The comparison process of the images will be done in this way. Literally this is the simple algorithm of the face recognition process. With the help of this algorithm the maximum match of a person is found. And also his full bio can be obtained.



4 ANALYSIS AND RESULTS

4.1 Analysis

The analysis process involves the following steps: Step 1: Face Detection and Extraction: Images can be captured with the help of webcam on the user side.

Start:

The captured image should be processed and extracted. The eigenvalue of the captured image should be calculated and

should be compared with eigenvalues of existing face images in the database. If the eigenvalues matches recognition step will be done otherwise, save the new face image information in the face database (xml file).

End

Step 2: Face Recognition:

The basis for the face recognition is PCA algorithm and using PCA the following steps would be followed for face recognition:

Start:

The information about the matched face image can be found from the database.

The name field in the face recognition module is added to the MS Access Database along with the date to make the completion of attendance for each student.

End

4.2 Results

The result of the analysis process is presented here in the form of grayscale images.



CONCLUSION:

In order to use the time effectively and to make the technology improved method of taking attendance. If this method is implemented practically more accuracy. Here in the system attendance is closed and the program is started again after few hours so, periodically presence of the students is found and the corresponding changes is made to it. The current work is mainly focused on IoT and machine learning. So, if this concept is brought into progress there will be betterment in society.

FUTURE ENHANCEMENT:

Students are recognized within seconds and the proper action is taken. If this system is introduced in schools, colleges and workplaces, manually workload is reduced. Face recognition is such a challenging yet interesting problem that it has attracted psychology, pattern recognition, neural networks, computer vision, and computer graphics. The future of the project should be focused on identification of similar faces and should provide a solution for twins.

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