

FACE IDENTIFICATION USING FACIAL RECOGNITION TECHNOLOGY

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Abstract:

Automatic face recognition (AFR) technologies have seen dramatic improvements in performance over the past years, and such systems are now widely used for security and commercial applications. An automated system for human face recognition in a real time background for a industries to mark the attendance of their employees. So Smart Attendance using Real Time Face Recognition is a real world solution which comes with day to day activities of handling employees. The matched face is used to mark attendance of the employee. Our system maintains the attendance records of employees automatically. Manual entering of attendance in logbooks becomes a difficult task and it also wastes the time. So we designed an efficient module that comprises of face recognition to manage the log in and the logout time of the employee and stored as the record. The employee can be identified by the data stored in the database. Once if the person whose detail is not found in the database made the entry then they will be get marked as unknown person.

Keywords – AFR, Time face recognition, Database.

1. INTRODUCTION

Automation or automatic control is the use of various control systems for operating equipment such as machinery, processes in factories, boilers and heat treating ovens, switching on telephone networks, steering and stabilization of ships, aircraft and other applications with minimal or reduced human intervention. Some processes have been completely automated. The biggest benefit of automation is that it saves labour, however, it is also used to save energy and materials and to improve quality, accuracy and precision. Automation has been achieved by various means including mechanical, hydraulic, pneumatic, electrical, electronic devices and computers, usually in combination. Complicated systems, such as modern factories, airplanes and ships typically use all these combined techniques. In the existing system the attendance monitoring system is based on manual operation. The person should always there to mark the attendance and marked using RFID concepts, finger print scanning. The attendance marked has to be stored and the record has to be maintained manually and some physical operations are done. Traditionally student's attendance is taken manually by using attendance sheet, given by the faculty member in class. The Current attendance marking methods are monotonous & time consuming. Manually recorded attendance can be easily manipulated. Moreover, it is very difficult to verify one by one student in a large classroom environment with distributed branches whether the authenticated students are actually responding or not. Hence the paper is proposed to tackle all these issues.

2. PROPOSED SYSTEM

In the proposed system the face recognition technique has been used in order to mark the attendance of the employee. Once the employee shows the face and if it matches with database then the log in time will get marked and stored in the database. Similarly for log out the employee has to show the face recognition

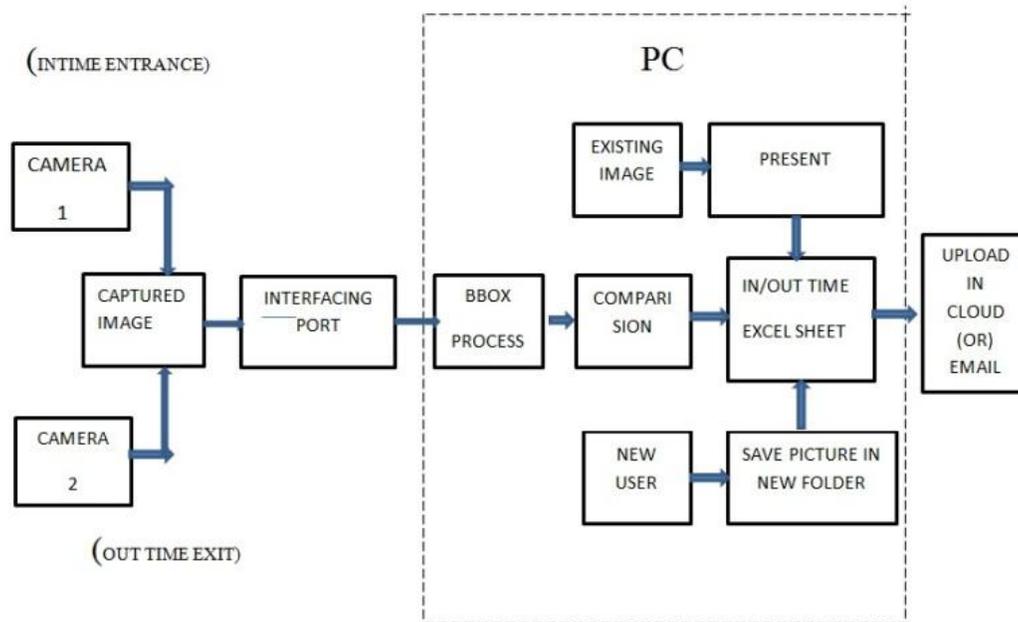


Fig.1.General block diagram

and after comparing with the database the logout time of the employee will get stored in the database. Once if the person whose data is not stored in the database mark the attendance then it will get stored as unknown person.

3. SYSTEM OVERVIEW

The MATLAB section consists of the face recognition module. Face Recognition module- Initially the images of each of the users is provided for the MATLAB & generate a set of facial features using of the feature extraction methods . PCA (Principal Component Analysis) –Thus we create a feature set for each of the images provided in the database. During real time, the images of human face may be extracted from a USB camera. This involves MATLAB's Image Acquisition Toolbox, using which a camera is configured, accessed & brought one frame at a time into MATLAB's workspace for further processing using MATLAB's Image Processing Toolbox. This method uses face approach Tan and Trigs illumination normalization algorithm for face recognition . First, the system the images of each of the users is provided for the MATLAB & generate a set of facial features using of the feature extraction methods .

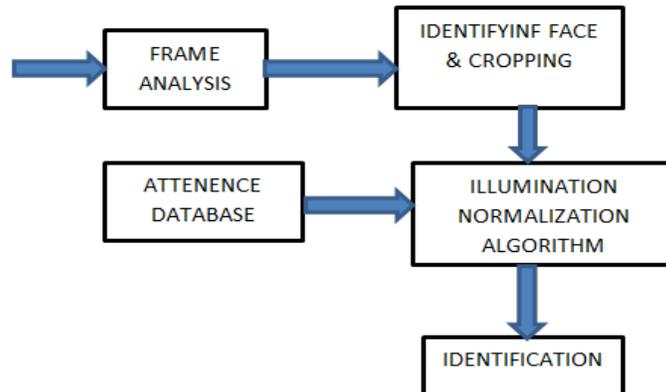


Fig.2.System implementation

PCA (Principal Component Analysis) –Thus we create a feature set for each of the images provided in the database. During real time, the images of human face may be extracted from a USB camera. This involves MATLAB's Image Acquisition Toolbox, using which a camera is configured, accessed & brought one frame at a time into MATLAB's workspace for further processing using MATLAB's Image Processing Toolbox. This method uses face approach Tan and Trigs illumination normalization algorithm for face recognition . First, the system needs to be initialized by feeding it a set of training images of faces. Next, when a face is encountered it comparing with known faces and using some statistical analysis it can be determined whether the image presented is known or unknown.

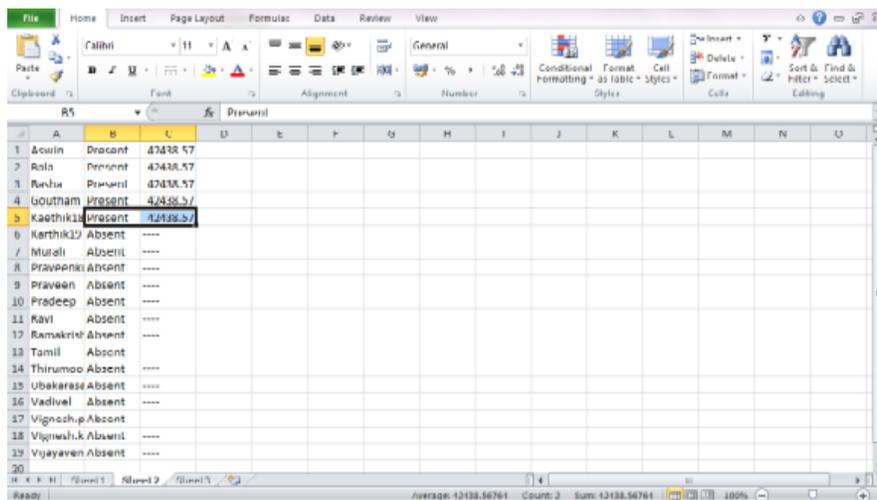
4. FACE RECOGNITION USING LBPALGORITHM

Facial recognition or face recognition as it is often referred to as, analyses characteristics of a person's face image input through a camera. It measures overall facial structure, distances between eyes, nose, mouth, and jaw edges. These measurements are retained in a database and used as a comparison when a user stands before the camera. One of the strongest positive aspects of facial recognition is that it is non-intrusive. Verification or identification can be accomplished from two feet away or more, without requiring the user to wait for long periods++ of time or do anything more than look at the camera. Gamma intensity correction is used to control the overall brightness of an image by changing the gamma parameter and it can be used to correct the lighting variations in the face image. The gamma correction is the process of taking the exponential of the input image. The output image would be darker or brighter depending on the value of gamma γ . In this work a value of gamma = 0.2 has been used. Gamma correction has been used in and for illumination normalization.

Recent developments in image analysis and recognition have shown that the Local Binary Patterns (LBP) provide a simple yet powerful approach to represent faces for human computer interaction, biometric recognition, surveillance and security, LBP is a grayscale invariant texture operator which labels each pixel of an image by thresholding its neighbourhood pixels with the intensity value of the center pixel. The resulting LBP labels can be regarded as local primitives such as curved edges, spots, at areas, etc. The histogram of these labels over facial image can be then used as a face descriptor. Given its discriminative power, tolerance to monotonic grey-scale changes, and computational, LBP has become a well-

established technique in FR3, and has inspired many recent extensions and new research on related methods. However, it is well known that LBP and other variants are sensitive to severe illumination changes. Variations in facial appearance caused by changes in ambient illumination conditions play an important role in the performance of any FR system applied to video surveillance. It has been shown that face images of different individuals appear more similar than images of the same individual under severe illumination variations.

5. RESULT ANALYSIS



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Acwin	Absent	47438.57												
2	Rohi	Present	47438.57												
3	Ravhu	Present	47438.57												
4	Goutham	Present	47438.57												
5	Kaethikl	Present	47438.57												
6	Karthikl	Absent	----												
7	Mutali	Absent	----												
8	Praveen	Absent	----												
9	Praveen	Absent	----												
10	Pradeep	Absent	----												
11	Ravi	Absent	----												
12	Ramakrish	Absent	----												
13	Tamil	Absent	----												
14	Thirumoo	Absent	----												
15	Ubakarasa	Absent	----												
16	Vadivel	Absent	----												
17	Vignesh.p	Absent	----												
18	Vignesh.k	Absent	----												
19	Vijayaven	Absent	----												
20															

Fig.3.Output result

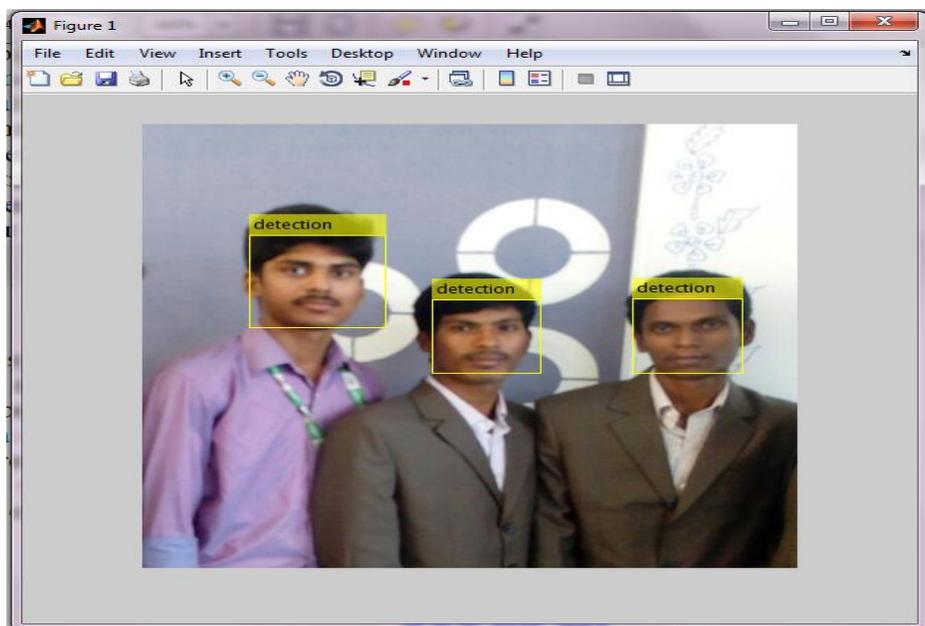


Fig.4.Detection analysis

CONCLUSION

This project is fairly accurate face detection results using theLBP method. Interestingly, we found that a database of some 60 images can be accurately represented and stored the unknown persons image in a specific storage.

FUTURE SCOPE

To improve the results of the LBP method implemented, and to create a program or platform to upload the output results in the cloud.

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