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RESEARCH ARTICLE

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SMART ATTENDANCE SYSTEM USING FACE RECOGNITION

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ABSTRACT

Students attendance in the classroom is very important task and if taken manually wastes a lot of time. This method is very useful to time utilization. The paper review the related work in the field of attendance system then describes the system architecture, software algorithm and results.

Today thumb scanning, retina scanning, single face, used to take attendance which are time consuming. many difficulties occurs in such system. convention method requires students to manually sign the sheet every time. . This work describes the efficient algorithm that automatically marks the attendance without human intervention. In this method attendance is recorded by using camera set inside the classroom that used to capture the photo.. Record will be save for future analysis in database. This attendance is recorded by using a camera attached in front of classroom that is continuously capturing images of students, detect the faces in images and compare the detected faces with the database and mark

Keywords: face recognition camera ,module Automatic Attendance; Face Detection; Face Recognition; Image, Enhancement;, Enrollment; Verification

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INTRODUCTION

Maintaining the attendance is very important in all the institutes for checking the performance of students. system lecturer takes the attendance in the classroom. lecturer is conducting the lecture in that given period of time. For instance,Face recognition consists of two steps, in first step faces are detected in the image and then these detected faces are compared with the database for verification lecturers with a large class may find the hassle of having the attendance being taken by teaching lecturer. In terms of analysis, the lecturer also has to perform manual computation to obtain the students attendance percentage, which normally consume a lot of time. Some students may give proxy attendance. Sometimes storage of sheets needs lots of space. ID tag or other identifications such the record of login/out in most e-Learning systems are not sufficient because it does not represent students context in face-to face classroom. It is also difficult to grasp the contexts by the data of a single moment. In method ofbiometric recognition generally matches a live digital image of a portion from a certain physical body part with a previously recorded image of that same portion; whether it is in identification mode where one-to-many comparisons take place or verification (authentication) mode where one-to-one comparisons occur.

We propose a method that take the attendance using face recognition based on multiple face detection technique. The objective of this

project is to implement image based face recognition algorithm by using web cam. After research into the field of image processing, we have found that there are number of ways for improving upon currently available face authentication systems]. In this paper, our purpose is to reduce time consumption, to keep a record & update to students about their attendance is achieved through face recognition system. Thus this system prove to be effective for class attendance. It is possible to estimate automatically whether each student is present or absent by using face recognition technology

LITERATURE SURVEY

We have studied the literature available in the fields of pattern recognition and biometric systems with a focus on facial recognition. In addition, a study of previous attendance systems and it atomization attempts was conducted to examine the similar previous systems. The literature is divided into[5]

- Biometric systems
- Single facial recognition system

Biometric systems

Definition:

Biometric recognition generally matches a live digital image of a portion from a certain physical body part with a previously recorded image of that same portion; whether it is in identification mode where one-to-many comparisons take place or verification (authentication) mode where one-to-one comparisons occur[5].

Examples:

- Hand:

There are mainly three biometric systems using the characteristics of the human hand; these are: Hand geometry, Vein Pattern analysis, and Palm identification.

- Voice:

Voice biometrics focus on the sound of the voice not on what is being said. That is why it is important to distinguish between this technology and those technologies recognizing words and commands. The sound of the human voice is caused by vibration in the vocal chords. The shape and size of the vocal tract, in addition, the shape of the mouth and the nasal cavities all contribute in the way a voice sounds. Voice recognition techniques may either use text-dependent or text-independent methods. In other words, voice may be captured by speaking out any phrase, word or number (text-independent) or by specifically saying a certain password combining phrases, words or numbers (text-dependent). However this biometric system may be challenged by the background noise that reduces the quality of the data and the systems performance [5].

Facial Recognition

Face recognition is considered to be one of the most successful applications of image analysis and processing; that is the main reason behind the great attention it has been given in the past several years[4]. This attention is clearly evident in the emergence of many research conferences targeting the field of facial recognition, such as: International Conference on Audio and Video-Based Person Authentication (AVBPA) and the International Conference on Automatic Face and Gesture Recognition (AFGR)[5].

Automatic Facial Recognition Process Flow:

Generally any biometric system goes through the same processes of the four modules explained earlier, biometric capture, feature extraction, and comparison. The facial recognition process is similar to the general biometric recognition process. Face-base biometric systems detection, alignment, feature extraction, and matching take place[5].

Table1:Results of the algorithm

Algorithm	Percentage Results		
	Veil	*Unveil*	*Beard*
Face Detection	40%	95%	75%
Face Recognition	2%	85%	63%

Different component are used for implementation. They are mentioned below[2].

- PC
- LCD
- Power supply
- Web Camera

Interfaces:

- DB 19
- Max 232

This is the diagram of Smart Attendance System Using Face Recognition with GSM based. Faces of the student is captured by group photo snap using web camera and stored into the database by using .NET code in the form of pixels. Camera is interface with PC by using DB19 then PC is

connected with ARM microcontroller which is interface with GSM boardUSB and LCD. LCD are used for indicating delivery report about message sending to the number which are stored in controller.

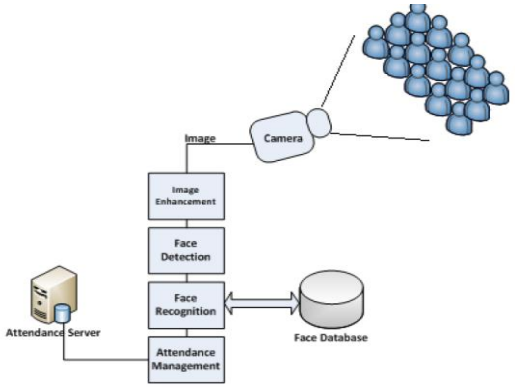


Fig: block diagram of proposed system

Using GSM board we can send message to correspondence mobile number of absent student. Absent student information is store into database. GSM MODEM, PC, SIM, LCD (Liquid Crystal Display), microcontroller, power supply and also some connecting wires are the common peripherals required for developing GSM based applications[2].

FACE RECOGNITION PROCESSING FLOW

The facial recognition process is similar to the general biometric recognition process, in the face-base biometric systems detection; alignment, feature extraction, and matching take place. The facial recognition process can be divided into two main stages: processing before detection where face detection and alignment take place (localization and normalization), and afterwards recognition occur through feature extraction and matching steps[3].

- Face Alignment

This process focus on finding the best localization and normalization of the face; where the detection step roughly estimates the position of the face, this step outlines the facial components, such as face outline, eyes, nose, ears and mouth. Afterwards normalization with respect to geometrical transforms such as size and pose, in addition to photometrical properties such as illumination and grey scale take place.

After the previous two steps, feature extraction is performed resulting in effective information that is useful for distinguishing between faces of different persons and stable with respect to the geometrical and photometrical variations.

- Face Matching

The extracted features are compared to those stored in the database, and decisions are made according to the sufficient confidence in the match score [3].

If the match is found in comparison mark student as present in data base. Case is not satisfied student treated as absent mark. Absent student inform through SMS with the help of GSM.

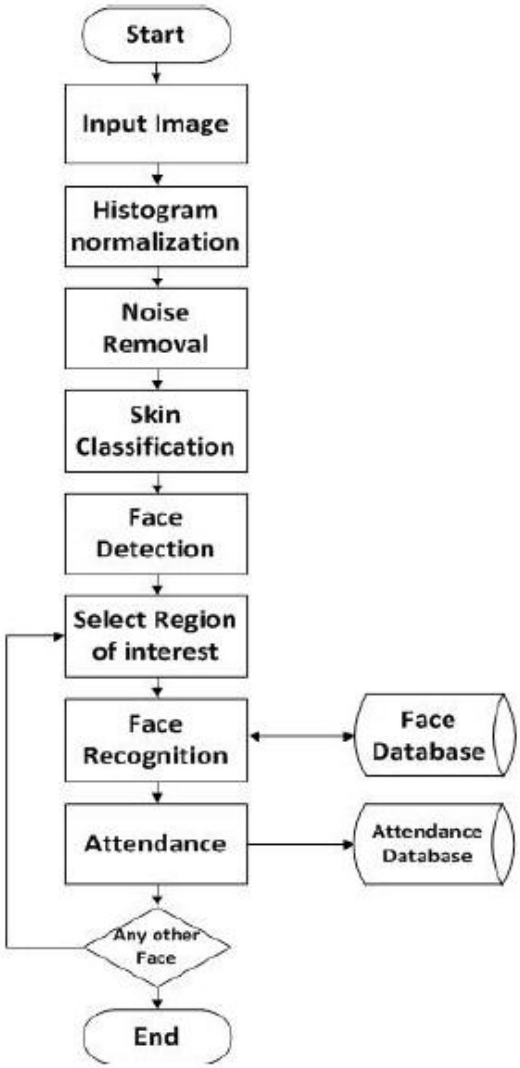


Fig: flow chart

SOFTWARE

".NET" is also the collective name given to various software components built upon the .NET platform. These will be both products (Visual Studio.NET and Windows.NET Server, for instance) and services (like Passport, .NET My Services, and so on).

1. Platform independent
2. Supports multiple programming languages
3. Easy to deploy

There is no language barrier with .NET: there are numerous languages available to the developer including Managed C++, C#, Visual Basic and Java Script. The .NET framework provides the foundation for components to interact seamlessly, whether locally or remotely on different platforms. It standardizes common data types and communications protocols so that components created in different languages can easily interoperate. This section describes the software algorithm for the system.

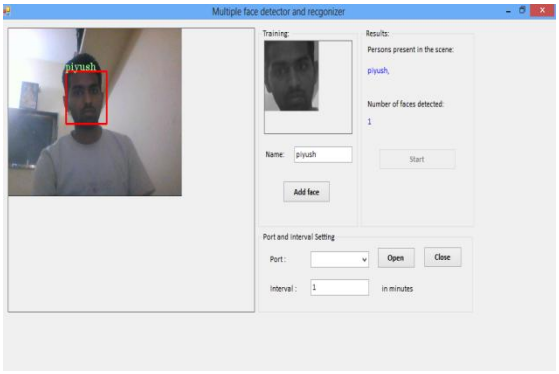
The algorithm consists of the following steps

- Image acquisition
- Histogram normalization
- Noise removal
- Skin classification
- Face detection
- Face recognition
- Attendance

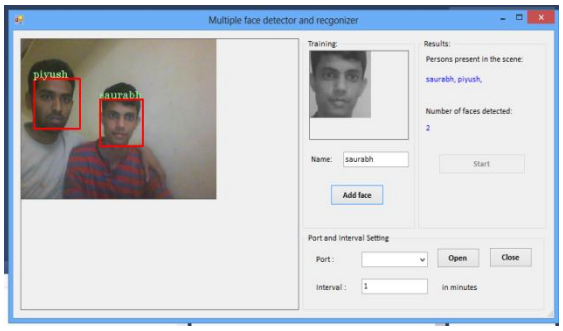
In the first step image is captured from the camera.

RESULT

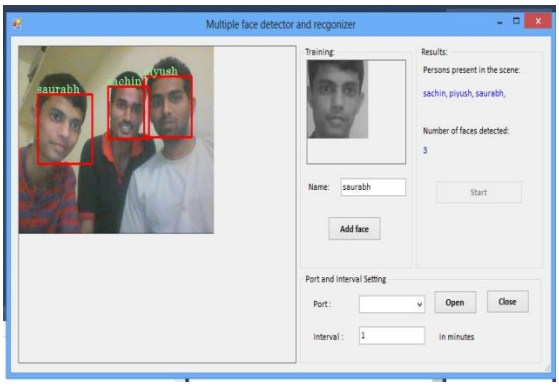
1. Identification of one student



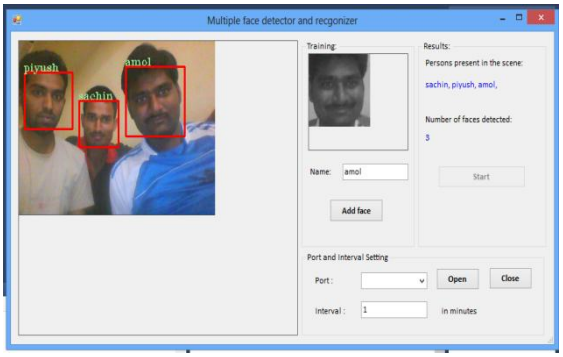
2. Identification of two student



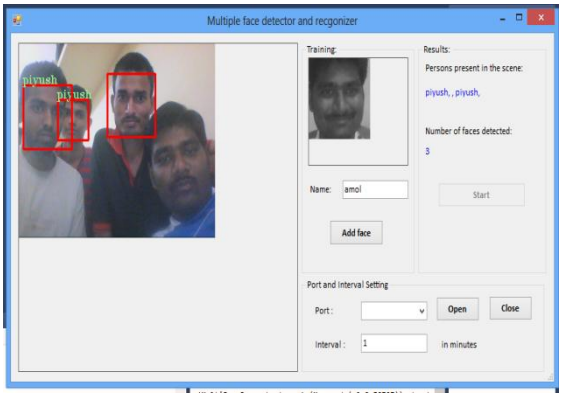
3. Identification of three student



4. Result name dose not shows for absent student saurabh



5. Error occurs for overlapping images

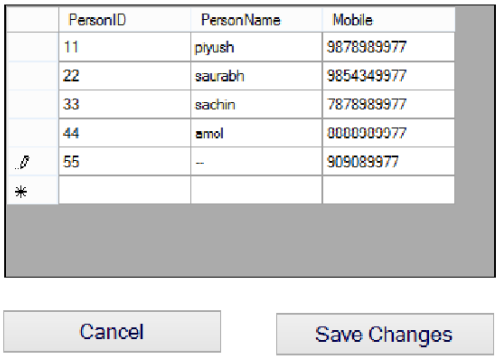


6. Format for final record

	PersonID	PersonName	DateTime
	11	piyush	2/02/2015 07:12...
	22	saurabh	2/02/2015 08:06...
	11	sachin	4/02/2015 07:30...
	22	amol	4/02/2015 08:15...
*			

Print

7. Record saving format



	PersonID	PersonName	Mobile
	11	piyush	9878989977
	22	saurabh	9854349977
	33	sachin	7878989977
	44	amol	0000000977
	55	--	909089977
*			

Cancel Save Changes

OBSERVATIONS

1. Percentage of matching group photo with initially save record is 70 to 80% for 3 to 4 students.
2. Time require for taking attendance, keeping record and information send to corresponding absent student is 30 to 60 sec.
3 If camera dose not identified any student.

CONCLUSION

This paper introduces the efficient and accurate method of attendance in the classroom environment that can replace the old manual methods. The system will estimates the attendance of students by image capturing. The result will improved the performance to reduce the time required for analyzing data record. There is a need to use some algorithms that can recognize the faces inveil to improve the system performance.

REFERENCES

[1]. Face Recognition-based Lecture Attendance System. Yohei Kawaguchi Tetsuo Shoji Weijane Lin y KohKakushoyy Michihiko Minohyy Department of Intelligence Science and Technology, Graduate School of Informatics, Kyoto University Academic Center for Computing and Media Studies, Kyoto University

[2]. Y. Li, S. Gong, and H. Liddell. Support vector regression andclassification based multi-view face detection andrecognition. In IEEE International Conference on AutomaticFace and Gesture Recognition, March 2000.

[3]. M. Turk and A. Pentland (1991). "Face recognition using eigenfaces". Proc. IEEE Conference on Computer Vision and Pattern Recognition.

[4]. Lijuan Duan, Guoqin Cui, Wen Gao and Hongming Zhang“Adult Image Detection Method Base-on Skin Color Modeland SupportVector Machine” ACCV2002: The 5th AsianConference on Computer Vision, 23--25 January 2002,Melbourne, Australia

[5]. R. Gross, J. Yang, and A. Waibel. Face rec Face Graph Matching: An Efficient Scheme for Moving Character Identification Krishna Bharath Reddy Kandula, Krishna TejaKancherla, Shoaib Ahmed, KaranamManoj Kumar B.Tech , Department of Computer Science and Engineering, K L University, Andhra Pradesh, India.Lead Engineer, Symbiosys Technologies , Andhra Pradesh, India International Journal of Computer Science and Management Research Vol 2 Issue 5 May 2013 ISSN 2278-733X

[6]. PETRA UNIVERSITY Automated Facial Recognition Attendance System (AFRAS) Prepared by Mohammad Ahmed Nasser 200610809 Farouq Ibrahim Abu-Shamma 200720383 Basel Emad Khalil 200811061 Supervised By: Dr.GhassanIssa