Biometric Attendance system

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Abstract – *In this paper we have presented about a system of recording student attendance using finger print. It can reduce the presence of fraudulent students. Which are now mostly done by the students can also reduce problems such as the presence of the missing papers. This system is easily available in the market so to make it more attractive we have added more advanced features to it. This system will save time wasted on calling out names of the students and it gives full proof method of attendance marking.*

Key Words: **Biometric, verification , student attendance , productivity.**

1. INTRODUCTION

There are many colleges around and each colleges consists up to many students. To handle a large number of students can be a problem especially for students attendance. In the majority of colleges are still using manual processes. (Manual process means in college when class is going on for attendance the teacher will give a piece of paper and student will check their names and then signed in front of their name). At the end of the class, the teacher will take back piece of paper where student has signed for keeping records of the students.

In class the teacher provide a list of the students to sign in for students who attended the class. Cheating often occur when if the student is absent in the class then to his/her attendance has signed by other student. Therefore, if there is any fraud student attendance, the teacher will not be able to identify the problem. So to avoid this problem, we are introducing finger print attendance system. This system will record the attendance of each student in the class. Typically, the paper format requires a lot of time for signing the attendance by all students. Students forget to sign it and class teacher assume the student is absent. This problem will also occur when the teacher forget to bring register or paper in class. So to overcome this we have introduced finger print attendance system.

This system is available in the market so to make it advanced we have introduced new features in this system. This project is simple but to make it interesting we have added some more advanced features to it. In this system we have three pages such as admin page, student login page, teacher page and we have added some features in it. some features we have added such as, if student want leave for particular date/reason (medical issue) then he sends requested message for leave with particular certificate like (medical certificate). This message sends to admin (class teacher) then after viewing his/ her message the class teacher decides he/she is eligible for defaulter or not for that particular day (means students grants holiday or not) and class teacher gives reply for requested message immediately.

2. METHOD AND MATERIAL

Establishing a fingerprint-based attendance system consisting of multiple readers connected to a server should be started firstly reader connected to an ordinary pc then the applied method is extended for a network. As the other systems including networking, the problem has two parts to be considered:

1-Hardware to be used which in this system include fingerprint readers, physical connections and interfaces linking the network and also determining whether the sever to be used should have special requirements or any pc can be used as server. Selected readers should have the required characteristic that give and efficient and also inexpensive system. Main readers characteristic to be considered include:

a- The type of scanner used in this system is critical part since it specifies the efficiency of fingerprint processing operation and also the expected degree of maintenance required and its cost

b- Fingerprint template capacity: size of database containing students fingerprint within the device to be

as large as possible to decrease number of devices needed and hence the cost of the system.

c- The transaction log capability: In this characteristic specifies how much attendance log events the reader can hold at the same time before they are downloaded successfully to the server database. This characteristic also determines the period that should not be exceeded to get the attendance from readers and to prevent system confusion to users. This period is Using this expected usage of device per day or per week.
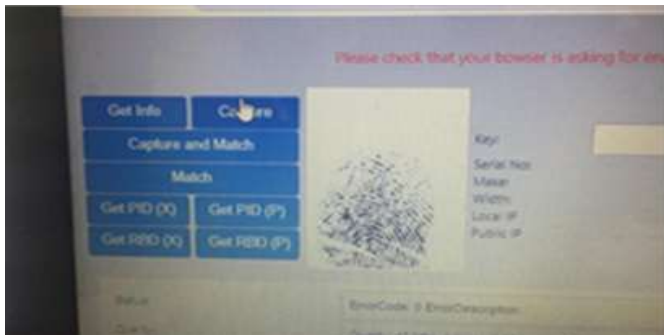

Fig. 2.1

FINGERPRINT CAPTURE

In this process the fingerprint image acquisition is considered to be the most critical step in the automated fingerprint authentication system, it also determines the final fingerprint image quality of the system, which has to be a drastic effect on the overall system performance. There are also different types of fingerprint readers available in the market, but the basic idea behind this is to measure the physical difference between ridges and valleys.

Fig. 2.2
FINGERPRINT SCANNER

The fingerprint sensor is one of the kind sensor which is used in a fingerprint detection device. These device

are mainly inbuilt in the fingerprint detection module and it is used for computer safety. The main features of this device and it mainly include accuracy, better performance, robustness based on exclusive fingerprint biometric technology. Both the fingerprint scanner otherwise reader are an extremely safe and suitable device for safety

3. PROPOSED SYSTEM

In this proposed system we have introduces a new automatic attendance management system, which integrate fingerprint authentication with attendance database management system for student. It is made up of to process namely; enrolment and authentication. Basic biometric attendance system is easily available in the market but we are introducing attendance system with some advanced features. Our attendance system has back end database management system with some added functionality. The existing attendance system only stores the which is captured by finger print scanner. But in our system after taking attendance functionalities such as generating defaulter list, calculating average attendance for each student. We have also introduced one more advanced feature which is not present in the most of the biometric system available in the market. A request message will be sent by the student to teacher if he/she want holiday for particular day then teacher has option to grant or disapprove the request. If teacher grant the holiday then that particular day will not be counted for the student to be eligible for defaulter. If teacher disapproves the request then he/she must attend the college on that particular day.
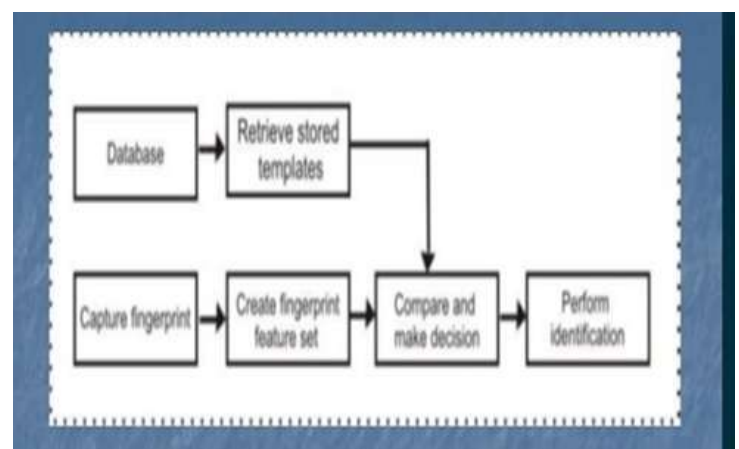

Fig. 3.1

The automatic management system comprises of the following categories:

i. Enrolment module
ii. Authentication Module

3.1 Enrolment Module

The task of enrolment module is to enroll Users fingerprints into the system database. During the enrollment process the fingerprint and other bio-data of the user is captured and the unique features are extracted from the fingerprint image and stored in the database as a template along with the user's ID. When improving the quality of a captured image during the process of enrolment and registration the two image samples per fingerprint used are captured for a higher degree of accuracy. The fingerprint images and the user name of a person is to be enrolled and are fed to the enrollment module. The minutiae extraction algorithm is first applied to the fingerprint images and the minutiae pattern features are expected.

3.2 Authentication Module

The process of the authentication module is to validate the identity of the person who intends to access the system. The person who is to be authenticated indicates his/her identity and places his/her finger on the fingerprint scanner. The fingerprint images are captured and enhanced, thinned at the image processing stage, and at feature extraction stage, the biometric template is extracted. It is then fed to the matching algorithm, which matches it against the person's biometric template stored in the system database to establish the identity

In this process for the student attendance, the lecturer (or a designated personnel last the case may be) selects his/her department, level, course code, attendance type (for example lecture, practical) and the attendance ID, then the student places his/her fingerprint on the fingerprint reader; then the fingerprint recognition unit compares the fingerprint features with those stored in the database, after a successful match. The student matriculation number is sent to the database along with the time of making attendance and it also update the status (either present/absent) of student's attendance for the class. The Student attendance is captured only once for each attendance type.

The fingerprint matching approaches includes minutiae-based matching, ridge-based matching and the correlation matching approaches. However, it is believed that minutiae-based matching approaches, upon which work is based and facilitates the design of

a robust, simple, and fast verification algorithm while maintaining a small template

4. IMPLEMENTATION

As and implementation of the purposed system we have developed application which will help us to identify the existing student from the class and make student present or absent on the basis of the thumb identify from the database.

So in order to identify whether student is there in the database or not first of all we have to enroll the student in the database our system will perform some number of enrollment steps which are mentioned below.

4.1 ADVANTAGES

•The students will be more regular in attending their class since now no password or no attendance sheet is required, so no friends or any other student can make attendance on behalf of other fingerprint are unique for every student.
•Teachers do not need to waste their approximately 15 min of 1 hour for taking attendance of students.
•There is no need to maintain an attendance sheet as the attendance are electronically stored in database.
•This system helps the faculty to easily find out the defaulter.
•User may also easily get attendance history of a particular student.
•It saves times, cost, effort and institute resources.

4.2 DISADVANTES

•The only disadvantage is that every class require a fingerprint reader to access the system.

NOTE:

The fingerprint scanner is not included in the system, you can buy it separately by clicking on below button.

4.3 ALGORITHM

Step 1: Initialize fingerprint scanner from serial port
Step 2: Get sensor information
Step 3: Start service to read a finger
Step 4: wait that finger is read
Step 5: Checks if finger is not already enrolled go to step 8
Step 6: Print message with id
Step 7: Go to step 16

Step 8: Converts read image to characteristic and stores it in char buffer 1

Step 9: Wait that finger is read again

Step10: Convert read image to characteristic and stores in char buffer 2

Step11: Compares the char buffer

Step 12: If fingerprint does not match raise exception

Step 13: Creates a templates and store it to fingerprint scanner device

Step 14: Get id and position and save the database
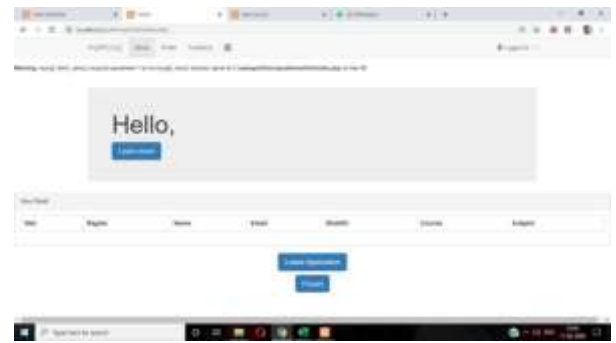
Step 15: Print success image

Flowchart for biometric attendance system

Fig. 4.1

Biometric page
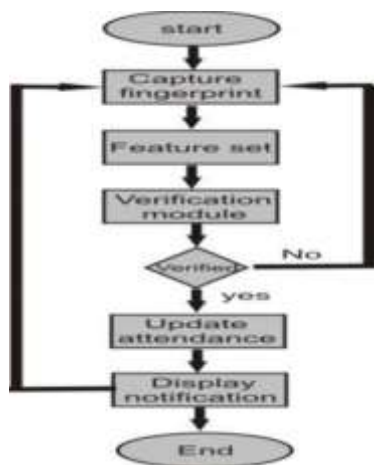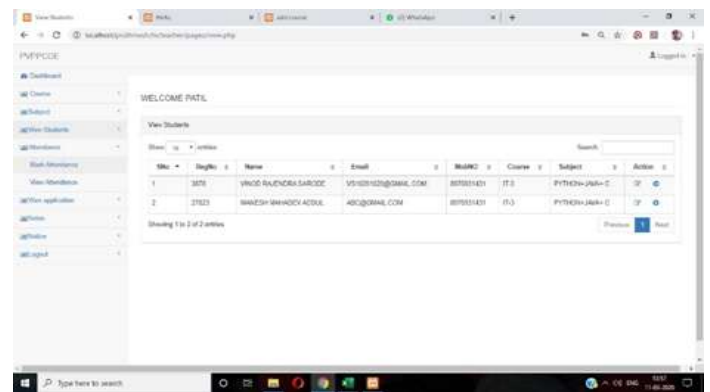

Fig. 4.2

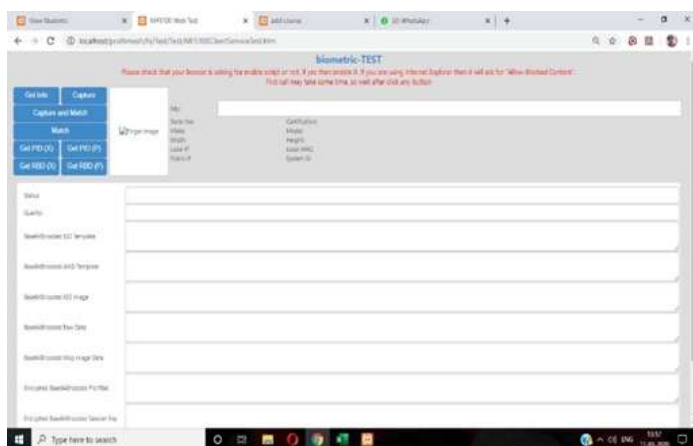**Login**

Fig. 4.3

College page
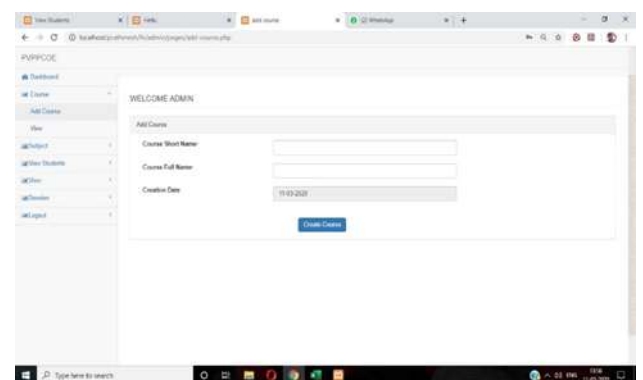

Fig. 4.4

Admin page

Fig. 4.5

5. CONCLUSIONS

In this, we have presented a fingerprint based attendance management system. This developed system is an embedded system that is part of a fingerprint recognition / authentication system based on minutiae points. This system extract the local characteristic of a fingerprint which is minutiae points in template based. These templates are matched during

the process of both registration and verification processes

This developed system is very helpful in saving valuable time of students and lecturers, paper and generating report at required time. This system also record the clock in and clock out time of students and workers in a very convenient manner using their fingerprint and it also reduces level of absence.

6. REFERENCES

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