ATTENDANCE VERIFICATION MANAGEMENT SYSTEM (AVMS)

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Abstract—**Appearance is one amongst the work principle that is valued by most scholar in schools as well as colleges, presence and scholastic reward are directly connected. Therefore, correct group action management systems should be engaged. Most of the tutorial establishments and authority organizations in Budding Nations still use pen Sheet based attendance methodology to track the Appearance. There is a need to put back these conventional strategies for participation recording with a more secure and vigorous framework .This paper shows the Appearance administration framework utilizing unique mark innovation in an institute campus surrounding. The Research paper is sorted out as takes after. Segment 1 depicts General introduction Segment 2 depicts related work which portrays on various bio-metrics utilized as a part of participation administration framework. Segment 3 gives a brief system overview which describes about the various components in the proposed system. Segment 4 exhibits the framework engineering and portrays about the modules in the proposed framework.. Segment 5 depicts the test after effects of the proposed framework. Segment 6 gives consequences of the paper.**

Index terms— Android , Biometric , Authentication, Attendance system , Application , Optical sensor , PHP, My SQL, Monitoring , Thumb , Databases ,WAMP.

1. INTRODUCTION

The term 'biometrics' has been gotten from two Greek words- “bios” meaning life and “metrics” meaning measurement Biometric innovation particularly recognizes an individual in light of specific qualities which can be physiological or behavioral. Unique mark appearance management framework is a standout amongst the most developed application in biometric innovation. It cannot be forged easily. By and By, appearance of scholars in most institutes is taken by the faculties on sheet based appearance registers. There are different burdens to this approach, for example, information isn't accessible for examination since paper based registers are not transferred to a brought together framework, time taken for information accumulation decreases the powerful class time and phony participation by scholars. An answer for defeat these issues is by utilizing a framework that will record the appearance consequently. Toward this way, this paper shows an extraordinary finger impression based biometric system that records the appearance normally. This framework comprises of a unique mark sensor which is utilized to distinguish the individual's ID. For instance, in instructive foundations, the scholars need to put their finger on the unique mark sensor to get their participation The unique mark caught is recorded in a flash memory and after that each time it is checked whether the gotten unique mark matches with the record in the flash memory after which the understudy gets the participation. By making utilization of this framework, we defeat the issues, for example, intermediary so no scholar can give participation for their companions who are absent. There are two phases of working of these frameworks 1) Enrolment of fingerprints. 2) Matching of Fingerprints.

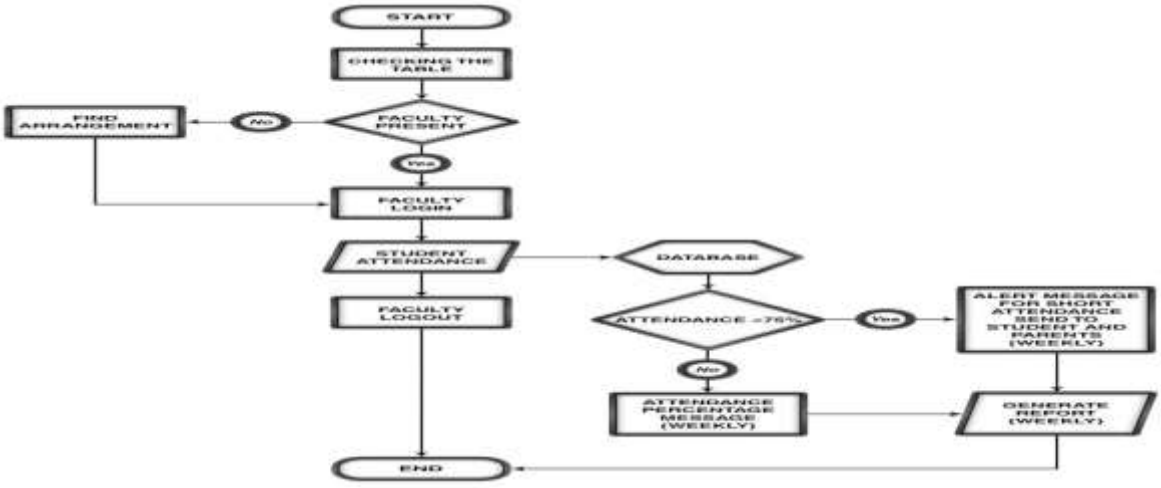

Fig.1 Working of Fingerprint Based attendance system

2. RELATED WORK

In [1], The creator portrays" Attendance is an idea that exists in better places like establishments ,associations, doctor's facilities ,and so on. Amid the begin and end of the day to check a man's participation .Fingerprint based biometric framework comprises of a unique mark sensor which is utilized to identify individual's distinguishing proof. For ex-In EDUCATIONAL INSTITUTIONS , the understudy needs to put their finger on the unique mark sensor to acquire their participation .By making utilization of this framework , we defeat the issues, for example, intermediary so no understudy can give participation for their companions who are missing " In [2], The creator produce an android application to compute the participation of the understudies in universities and refreshing the outcome straightforwardly into the school server.The information will be put away in the Smartphone if the web association is inaccessible around then. at the point when the web association is accessible , then the personnel can login their school record and refresh the participation result. In [3], According to creator – "Participation administration framework is a product produced for day by day understudy participation in schools, universities, and organizations. It encourages to get to the participation data of a specific understudy in a specific class .The data is arranged by the administrators , which will be given by the educator to a specific class, this framework will likewise help in assessing qalification criteria of an scholar.In[4], "Biometric distinguishing proof" is a general term for advancements that allow coordinates between a live computerized picture of a piece of the body and a formerly recorded picture of a similar part , typically filed to individual or last data". Findings– Biometric innovation as methods for dependable recognizable proof has certain lacunae's.This is particularly in nations like India were a substantial piece of populace lives in a provincial domain with agribusiness and hard physical work as methods for subsistence . In[5], The creator says " Fingerprint based participation framework can be utilized for recognizable proof of expansive number of understudies in colleges and furthermore for participation checking of workers in associations. "

3. SYSTEM OVERVIEW

This proposed system introduces a new automatic attendance management system, which integrates fingerprint authentication into the process of attendance management for both staff and student. It is made up of two processes namely; enrolment and authentication. During enrollment, the biometrics of the user is captured and the minutiae data are extracted and stored in a database as a template for the subject along with the user's ID. The objective of the enrolment module is to admit a user using his/her ID and fingerprints into a database after feature extraction. These features form a template that is used to determine the identity of the user, formulating the process of authentication. The enrolment process is carried out by an administrator of the attendance management system. During authentication, the biometrics of the user is captured again and the extracted features are compared with the ones already existing in the database to determine a match. After a successful match, attendance is marked against the user's id used in matching the templates. The work utilized a fingerprint reader as the input to acquire images, developed program that has fingerprint recognition and identification system as well as database to store user's information. The database comprises the fingerprint templates and other bio-data of the users together with the attendance records made by the users. Our system primarily focuses on building an efficient and user friendly Android mobile application for an Attendance Monitoring. The application will be installed on the professor's phone as well as student's phone which runs android OS. It intends to provide an interface to the professor who will require minimal details to input for marking of attendance of a particular class of students. Apart from that, the application would support strong user authentication and quick transmission of data. Another noticeable feature of the entire application is to give options to the user such as feedback provision, attendance retrieval in a very convenient way, messaging between user and professor and campus notifications like low attendance reminder. The application thus build would also help to avoid the chance of a proxy as the system has biometric scanning which will serve the purpose of authentication.

MODEL NO.SB8N Fig.2 Fingerprint Reader

USB Biometric Scanner w 2000 storage capacity (Android Support)

- USB 2.0 (Full Speed)
- 32bi RISC CPU
- 2000 Data / Finger Capacity
- 600 DPI Optical Fingerprint Sensor

Technical Specification	
Interface mode	USB2.0
CPU	32bit RISC CPU
OS	Android / Window 7, Vista, Windows Server 2003/2007/2008/NT4 & Linux
Finger capacity	2000
Sensor	Optical sensor
Working voltage	5V
Working current	Less than 150mA
Database Capacity	2000
Number of inputs for a fingerprint enrollment	2 times
Image Dimension	256 × 256 pixels (400 dpi)
Speed	≤1S
FRR	< 0.1%
FAR	< 0.001%
Temperature	-10°C ~ +60°C
Humidity	20% ~ 80%

4. SYSTEM ARCHITECTURE

The design of the fingerprint-based attendance management system is made up of the following:

i. Enrolment module

ii. Authentication Module

iii. System database.

4.1 ENROLMENT MODULE

The task of enrollment module is to enroll users and their fingerprints into the system database. During enrolment, the fingerprint and other bio-data of the user is captured and the unique features are extracted from the fingerprint image and stored in a database as a template for the subject along with the user's ID. Staff bio data to be captured includes: employee number, surname, other names, sex, position, phone number, email,and department. Student bio data includes: university roll number, surname, other-names, sex, trade, semester, email id, phone number and passport photograph. To improve the quality of a captured image during enrollment/registration, two image samples per fingerprint used are captured for a higher degree of accuracy. When the fingerprint images and the user name of a person to be enrolled are fed to the enrollment module, a minutiae extraction algorithm is first applied to the fingerprint images and the minutiae patterns (features) are extracted.

4.2 AUTHENTICATION MODULE

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

the person's biometric template stored in the system database to establish the identity. During authentication, for staff attendance, a staff supply his/her department and name, then places his/her finger over the fingerprint reader, the fingerprint recognition unit compares the fingerprint features with those stored in the database, after a successful match, the staff's employee number is sent to the database alongside the time of making such an attendance and update the status (either present/absent) of user's attendance for the day. Staff attendance is captured twice a day for both arrival and departure time.For student attendance, the lecturer (or a designated personnel as the case may be) selects his/her department, level, course code, attendance type (for example lecture, practicals etc) and the attendance ID, then the student places his/her fingerprint on the fingerprint reader; the fingerprint recognition unit compares the fingerprint features with those stored in the database, after a successful match, the student's university number sent to the database alongside the time of making such attendance and update the status (either present/absent) of student's attendance for the class. Student attendance is captured only once for each attendance type.

4.3 THE DATABASE

The attendance management system database consists of tables that stores records, each of which corresponds to an authorized person that has access to the system. Each record may contain the minutiae templates of the person's fingerprint and user name of the person or other information such as pin no as an index to the template. The database design for the system implements relational data model which is a collections of tables in which data are stored. The database was implemented in Microsoft SQLServer database (SqlServer,2005).SQLServer is fast and easy,it can store a very large record and requires little configuration.

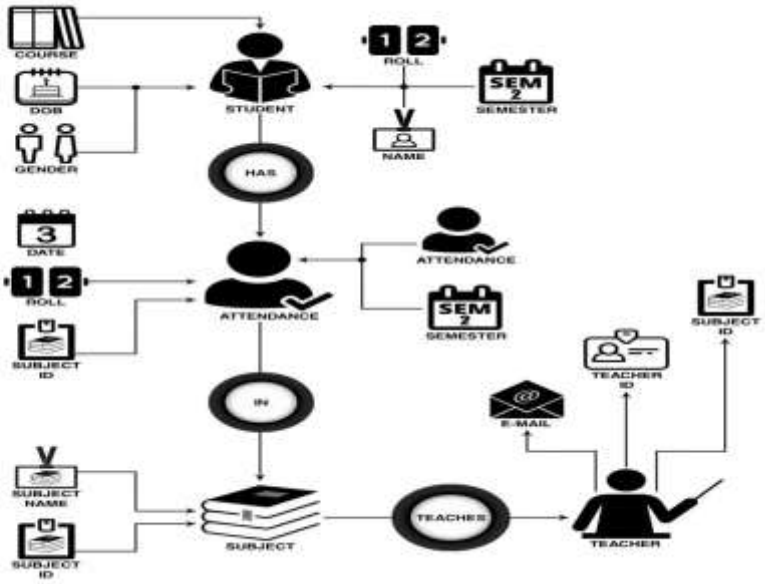

Fig. 3 Methodology

5. EXPERIMENTAL RESULTS

5.1 DETAILS OF THE EVALUATION

	Successful Verification	Unsuccessful Verification
Staff	30	0
Student	84	3
Total	114	3

5.2 TIME TAKEN FOR VERIFICATION

Type of system	No of Attendee	Total time in seconds	Total time in minutes	Average Execution time in seconds
Fingerprint Based Attendance System	117	502.41	8.37	4.29
Manual Attendance System	117	2161.55	36.02	18.48

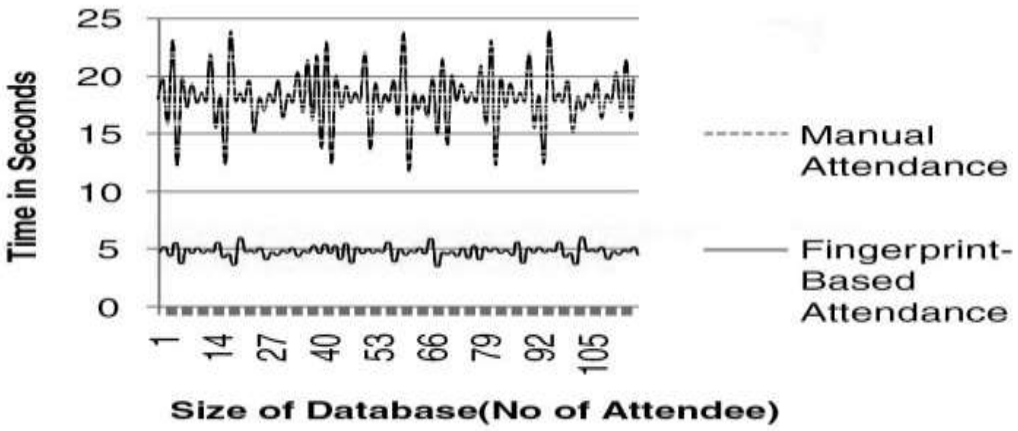

Fig.4 Comparison of the Manual Attendance with Fingerprint Based Attendance system .

The developed fingerprint-based attendance management system was compared with the existing manual attendance system (use of paper sheet/attendance register) and the time of taking both attendance was recorded. The manual attendance system average execution time for one hundred and seventeen (117) attendees is approximately 18.48 seconds as against 4.29 seconds for the fingerprint-based attendance management. Table[II] shows the time taken for verification. Figure 4 shows the comparison of the manual system with the Fingerprint-based Attendance Management System.

6. CONCLUSION

In this paper, we have presented a fingerprint-based attendance management system. The developed system is an embedded system that is part of a fingerprint recognition/authentication system based on minutiae points. The system extract the local characteristic of a fingerprint which is minutiae points in template based. Templates are matched during both registration and verification processes. For improved quality control during the registration or verification process, a matching score was used to determine the success of the operation. The matching score was specified so that only sets of minutiae data that exceed the score will be accepted and data below the score will be rejected. Therefore, Fingerprint Recognition using Minutia Score Matching method was used for matching the minutia points before attendance is recorded.The developed system is very helpful in saving valuable time of students and lecturers, paper and generating report at required time. The system can record the clock in and clock out time of students and workers in a very convenient manner using their fingerprint to prevent impersonation and reduce level of absence. Also, it reduces most of the administrative jobs and minimizes human errors, avoids proxy punching, eliminates time-related disputes and helps to update and maintain attendance records.

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