BIOMETRIC ATTENDANCE SYSTEM USING IOT

[1]Jayalaxmi Kounder, [2]Nishigandha Jambhale,[3] Tanisha Sawant,[4] Sayli Wadkar
[5]Prof Sonali Suryawanshi
[1, 2, 3,4,5]Dept of Computer Engineering
[1, 2,3,4,5]Rizvi College of Engineering, Mumbai, India

Abstract- Biometric Attendance System is a unique way of taking Attendance for identification and verification process using IOT. This is the system where we can actually avoid all the type of cheating or misuse of getting attendance, it is related to fingerprint scanning, which is unique identity of each person where duplication is not possible and we get greater percentage of accuracy. In this report we have compared various types of proposed system on fingerprint attendance system and improvement over it.by adding the feature of GSM tracking of location and pass on the message to their respective Guardians through toll free text or email.

Keywords- **Fingerprint Scanning, IOT, GSM tracking**

1. INTRODUCTION:

Fingerprints are now used in various fields for identification and verification purpose. They are used for attendance purpose in organizations to avoid proxy for criminal identification like terrorist, murderer and violators and also in passports (a matter of national high importance) of person. Here in this project we have tried to automate a classroom attendance system (conventional attendance system) by using a fingerprint recognition module interfaced with 8051 microcontrollers. A fingerprint recognition system can be used for both verification and identification of data. In verification, the system compares an input fingerprint to the pre saved fingerprint of a specific user to determine if that is   the same finger (1:1 match).If it is not the same finger the system compares an input fingerprint with the prints of all enrolled users in the database to determine if the person is already known under a duplicate or false identity (1: N match) to identify fake person to be inspected.

2. METHODS OF ATTENDANCE SYSTEM

2.1 Conventional methods: - Conventional methods   include time sheet, attendance register and time clock, which is time consuming with low level accuracy due to pen paper method.

2.2 Automated methods: - Automated method include Barcode attendance system, magnetic stripe attendance system, Radio Frequency Identification (RFID) and the biometric attendance system, which is quick process and more accurate than the conventional method.

3. VARIOUS EXISTING SYSTEMS

3.1 Barcode attendance system
It is a type of system where the unique barcode is scanned with barcode scanner which will make entry in the student attendance system and then later all the details are stored in the database which can be used for further reference. For e.g. the barcode we have in our ID cards contain barcode can be scanned to take attendance.

Requirements: Barcode scanner, Student attendance system, Database server and Barcode to be scanned.

Advantage:
- Smaller and Lighter
- Less Expensive
- It is widely used technology

Disadvantage:
- If Barcode is damaged it cannot be scanned.
- It takes more time to scan all barcodes
- Chances of forgery

Fig-1 Barcode

3.2 Radio Frequency Identification (RFID): - It is the type of attendance system where a tag is attached with any product like ring or ID card which is tracked using radio frequency.

Requirements: Scanning Antenna, Transreceiver, Transponder.

Advantage:
- Can be read from larger distance with great speed.
- No proper alignment or position needed

Disadvantage:
- Tag collision can occur due to many tags at smaller area
- It is costly than the Barcode based system

4. INTRODUCTION TO PROPOSED SYSTEM

4.1 Biometric attendance system using fingerprint sensor

- Biometric identifiers are unique for each individual, they are more reliable in verifying identity than token and knowledge-based methods; however, the collection of biometric identifiers raises privacy concerns about the ultimate use of this information
- It scans the finger and update the attendance, which is unique so, there is no fraud possible.
- Biometrics overcome the problem of convenience and experience skill for Authentication using IOT concepts. Biometrics makes use of an individual's physiological and behavioural characteristics like fingerprint patterns, iris patterns, vein pattern, etc, to identify the user.

4.2 Components

- Arduino Uno
- Finger Print Scanner R305
- LCD Display 16*2
- SPST Switch
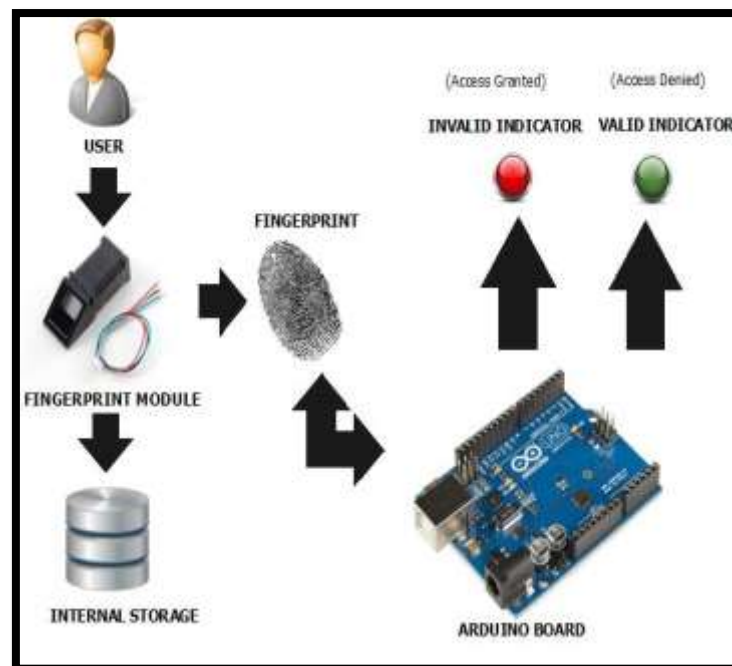- WIFI Module

4.3 Block Diag of Proposed System

Fig 2-Block diagram

4.4 Advantages of Biometric System

- It is highly Accurate
- It is unique and cannot be same for two persons
- It uses small space
- Easy to use
- Less costly than other proposed system

4.5 Added New Features in the Proposed System

- GSM tracking of location and sending it to the respective guardian of the Student with the help of Tollfree messaging or mail system.

5. CONCLUSION

- The proposed system titled "Biometric Attendance System using IOT" would help in accurate identification and authentication of a student through Fingerprints. This system would help provide access to authorized person whereas block access to unauthorized person/student.
- This project will help to solve the problems of forgery of identities. The system would provide less manual work and a hassle-free authentication process. With the use of microcontrollers and biometrics, as in the system, the man power
- (teachers and staff) required would be less, which will result in easy and systematic authentication process.

6. Reference

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