

IoT based Portable Attendance System

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Abstract - Conventional method of attendance marking is a tedious task and requires some time investment also. In a cumulative sense, the time invested in this activity is of significant amount. A wireless biometric based system can help in alleviating this issue. This paper delves into the design and implementation of a wireless fingerprint attendance management system. This is a portable device that also helps in maintaining the database for the registered candidates. This system based on biometrics and wireless technique not only save valuable time but also solves the problem of spurious attendance and the trouble of laying the corresponding network. It can take the user's attendances more easily and also more effectively.

Key Words: Attendance, IOT, Biometric, Fingerprint, Portable.

1. INTRODUCTION

Biometric such as fingerprints, voices and ECG signals are unique human characters that cannot be tampered or replicated. This facilitates real time system implementations. These biometric attendance systems are commonly used to mark the presence in offices and schools. This project has a wide application in school, colleges, offices, business organization where marking of attendance is required accurately with time. Conventional attendance system followed in an educational system where the teacher's call out the name of each and every student and mark the attendance causes time wastage during lecture time. This becomes more severe especially in the current scenario where number of students in class is very large. Managing the attendance of such a large group is also very difficult. Another disadvantage of present system is the chance for the student to mark fake attendance. In here the devices are use computer to store and verify fingerprints. Thus by using Fingerprint sensor, the system will become more secure for the users.

1.1 Literature Survey

According to the IOT based attendance system-IRJET-2017 there system requires a micro controller to function so they have chosen the ESP826612e.To display the names of the students whose fingerprint is scanned so they chose an OLED display to display the student name. To scan and recognize the fingerprints they chosen the fingerprint module R305.providing the power to the system battery of 5v is connected. Other components required are switches, wires, and PCB. Now the Attendance is also very important

factor for many educational institutions in South Africa therefore They are carry off through the use of the new and fast growing Radio Frequency Identification (RFID) technology to develop a modular device for the acquisition of attendees id. A IEEE 802.15.4 enabled radio interface is also embedded to provide autonomous data acquisition into the administrators database application. In addition, a database Application Programming Interface (API) is developed based on Microsoft Excel using C# java high level programming. The test outcomes of the design are presented to validate the approach used in this work. now the different between the Design and implementation of an RFID based smart attendance register-IEEE-2017 and the IOT based Automatic Attendance Management System-ICCTCEEC-2017 is that they using the Attendance Management System is the implementation of Internet of Things through Raspberry Pi 3 and RFID Technology in order to reduce the time consumed by the traditional system of recording daily attendance in schools and institutions. So everything here in turn gets automated. An attempt has also been made to develop an Android application (app) and help the students' to view their attendance anywhere, anytime.

2. FUNCTIONS AND COMPOSING OF THE SYSTEM

2.1 Hardware Design

In here we are using the R307 is a finger print sensor module with TTLUART interface for direct connections to microcontroller UART or to PC through MAX232 / USB-Serial adapter. The user which is going to register can store the finger print data in the module and can configure it in 1:1 or 1: N mode for identifying the person. It has a baud rate of 9600 and is able to store 127 different finger prints.

NodeMCU ESP8266 is a programmable wi-fi module and can be configured to connect to the Internet for Internet of Things (IOT) and similar technologies.

OLED Display is a 0.96 inch blue OLED display module. The display module can be interfaced with any kind of microcontroller using SPI / IIC protocols. It has a resolution of 128x64. The package includes in it the display board, display and a 4pin male header pre-soldered to board.

2.2 Software Design

Arduino IDE is an open source platform used to build various projects. Arduino is composed of two things. first the physical programmable circuit board (often referred to as a microcontroller) and the second is a section of software, or IDE (Integrated Development Environment) that runs on your computer, it used to write and upload the computer code into the physical board.

Embedded C Sequential Programming Language. C language is software designed with different keywords, data types, variables, constants, etc. Embedded C is a generic term given to a programming language written in C, which is connected with particular hardware architecture. Embedded C is an extension to the C language with some additional header files. These header files may change from controller to controller.

Firebase is a mobile and the firebase is also a web application development platform which is developed by the Firebase. Firebase provides the real time database and also the backend as a service. The service provides the application developers and the API that allows application data to be synchronized across the clients and also the stored on Firebase's cloud. Firebase Storage provides total secure file uploads and also downloads for Firebase apps, regardless of network quality. The developer can use it to store images, to store audio, to store video, or other user-generated content. Firebase Storage is backed by Google Cloud storage.



Fig -1: Connectivity Concept

IRJET sample template format, Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, sc, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.



Fig -2: Flow Diagram

3. METHODOLOGY

3.1 Registration Process

In Registration process the database has to be created by taking the fingerprint input from the users through R305. Now each of the fingerprint would be assigned a unique ID after this registration process is done. This unique ID could be roll no. of student or employee ID of the employees. This process is done for each and every registration and all the IDs would be uploaded on Firebase.

3.2 Validation process

Validation will only be done for the fingerprints those are already registered. Now when any student or employee inputs his / her fingerprint on the R307, it would check the database if the fingerprint matches any ID. If the fingerprint gets matched with the fingerprint registered in the database, then it would mark that particular ID as present and upload it on cloud. If the fingerprint does not match with any of the fingerprint registered in the database then it would show an error message to the user.

3.3 Uploading the data

When the overall data gets uploaded on firebase, the faculty/employer can have access anytime to that data and an excel sheet would be generated stating the number of people present and absent.

4. CONCLUSION

Attendance management has got another face to be handled. Creating an advanced version always has a better advantage. Recording attendance biometrically and obtaining data from database is very easy and a new way to have a secure system. It has better advantages and it also reduces paper work. Connecting the components and creating a portable system gives simplicity. Portable system is always preferable and this system can be carried anywhere when needed. An IOT based Biometric Attendance System which is compact, portable, fast, consumes less power is created. The hardware works very efficiently. There are no issues with the hardware. The connection between hardware and software is established. The attendance details are stored into a

database. A website is created through which one can check the details in the database. A user friendly, easy to use device which reduces the human effort and consumes less time for the operations is developed.

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