IOT BASED DISTRIBUTED ATTENDANCE SYSTEM

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ABSTRACT

The main objective of this paper is to provide an overview of Internet of Things, architectures, and vital technologies and their usages in our daily life. However, this manuscript will give good comprehension for the new researchers, who want to do research in this led of Internet of Things and facilitates knowledge accumulation in e silently. Remote access is a wonderful feature that came because of high speed internet. The main objective of proposed system is to provide a technology oriented and low cost system. In This paper, an effort is made to solve regular lecture attendance monitoring problem in developing countries using IOT technology. The application of IOT to student attendance monitoring as developed and deployed in this study is capable of eliminating time wasted during manual collection of attendance and an opportunity for the educational administrators to capture and for further managerial decisions.

INTRODUCTION

One of the Information Technology is Internet of Things (IoT)[5][8]. The future is Internet of Things, which will transform the real world objects into intelligent virtual objects. The IoT aims to unify everything in our world under a common infrastructure, giving us not only control of things around us, but also keeping us informed of the state of the things. In Light of this, present study addresses IoT concepts through systematic review of scholarly research papers, corporate white papers, professional discussions with experts and online databases. More-over this research article focuses on definitions, geneses, basic requirements, characteristics and aliases of Internet of Things.

Internet of Things (IOT) has provid an opportunity to build powerful industrial system and applications by leveraging the growing ubiquity of RFID[1], wireless, mobile and sensor devices. Many industrial IOT applications have been increasingly developed and deployed in recent years. Now-a-days, controlling and monitoring plays a main role in our day to day life. Everything we can monitor and control using advanced technologies.

In recent years, there have been rise in the number of applications based on Biometrics using IOT systems and have been successfully functional to different areas as diverse as transportation, health-care, agriculture, hospitality industry and institute. IOT technology facilitates automatic wireless indentation using different characteristics of Biometric.

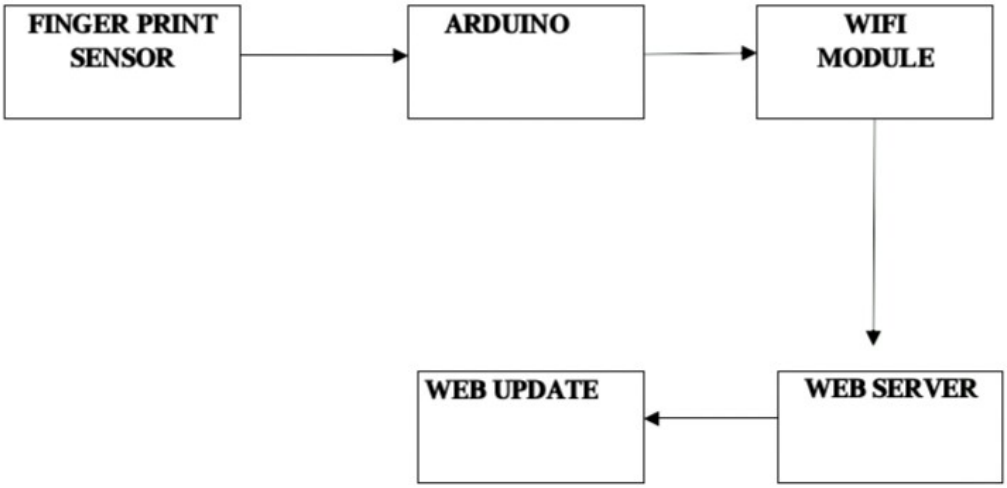
An educational institution or business organization, it has to maintain a proper. Record of attendance of students for the impressive functioning of the Organization. Designing an efficient attendance management system for students to maintain the records with ease and accuracy is an important key behind inspiring. Now a day attendance is taken on paper and records are maintained Where someone keeps all the records and does all the calculations at the end of the month due to which it takes time and students have to wait till month and to know their attendance. Sequel to these lectures and administrators in most developing countries have to come up with ways to ensure a healthy participation from students and make sure that the students-lecture collective relationship is kept perfect. This is some cases have come in simple forms like roll calls, while in more interesting cases, can be formats like surprise quizzes, extra credit in class, etc. These strategies are however time consuming, stressful and laborious because the valuable lecture time that could otherwise be used for lectures is dedicated to student attendance taking and sometimes not factual.

IOT is a charismatic network organization with self configuring capabilities based on standard and interoperable communication protocols in the IOT; physical and virtual things “have identities, physical attributes and virtual personalities and use intelligent interfaces. The physical and virtual "things" are seamlessly integrated in to the information network. Biometric Identification Systems are widely used for unique identification of humans mainly for verification and identification. Biometrics is used as a form of identity access management and access control. So use of biometrics in student Attendance Management system is a secure approach. There are many types of biometric systems like fingerprint recognition, face recognition, voice recognition, iris recognition, palm recognition etc.

A fingerprint is the pattern of ridges and valleys on the surface of a fingertip. The endpoints and crossing points of ridges are called minutiae. It is a widely accepted Assumption that the minutiae pattern of each finger is unique and does not change during one's life. By using fingerprint and IOT a smart attendance System can be implemented via Wi-Fi. once student or teacher will place his/her finger if they have registered before then they will get an acknowledgement via email that they have successfully registered and the attendance will also transfer to the central sever where each and every nodes are connected via Wi-Fi[1].

SYSTEM OVERVIEW & PROPOSED METHODOLOGY:

The proposed system uses biometrics (fingerprints) to mark attendance which eliminates the problems of proxy and human error altogether. It also uses data acquisition by which the attendance stored in the memory is extracted into a database which is easier to manage and maintain compared to sheets of papers. Copies of these databases can be made to assure that even though the database gets corrupted or deleted by human error there is still back up available. Since it uses fingerprints there it also eliminates the necessity to take roll calls and thus saves time as well. In this system basic components are: Arduino Hardware, Fingerprint sensor module, Wi-Fi module.



- ARDUINO:

Arduino UNO is a microcontroller based on ATmega328P. It has 14 digital input/output pins, 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; it only requires to be connected to a computer. This Arduino is the heart of the project, it performs all the required functions from storing and scanning and verification of fingerprints. This board also has 1KB of EEPROM memory which is used to save the attendance and retrieve it later since even after power off the data is maintained in the EEPROM memory.

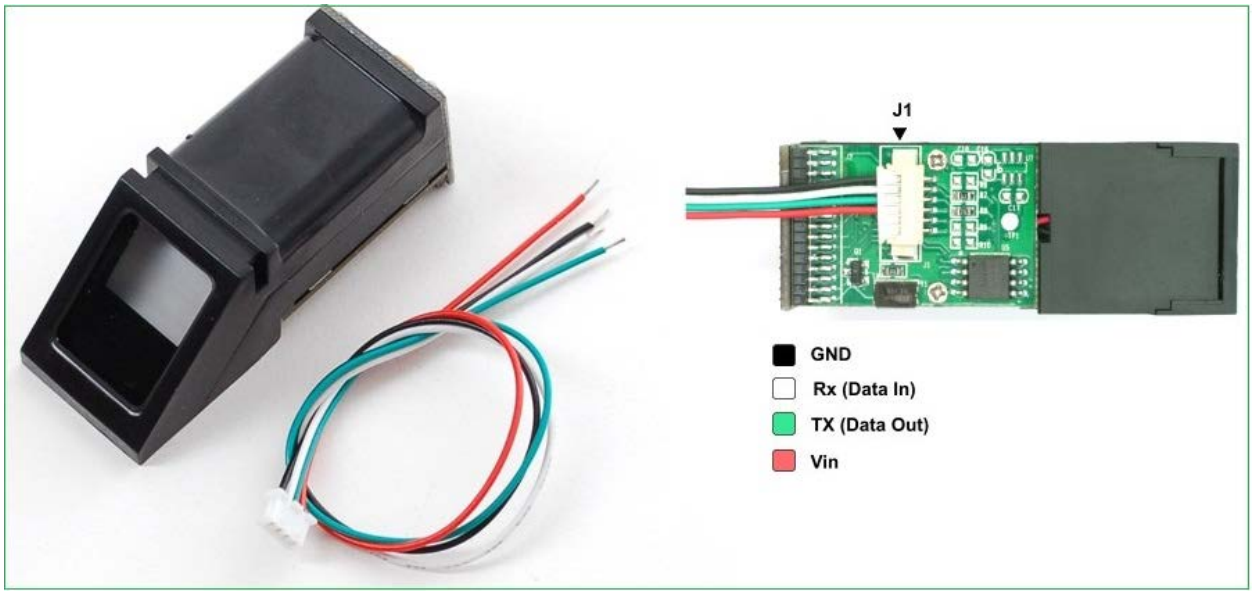
- FINGERPRINT MODULE:

This is a finger print sensor module with TTL UART interface. The user can store the finger print data in the module and can configure it in 1:1 or 1: N mode for identifying the person. The finger print module can directly interface with 3v3 or 5v Microcontroller. This is a finger print sensor module with TTL UART interface. The user can store the finger print data in the module and can configure it in 1:1 or 1: N mode for identifying the person. The finger print module can directly interface with 3v3 or 5v Microcontroller.

INTERFACING FINGERPRINT SENSOR WITH ARDUINO:

This optical fingerprint reader device uses high powered DSP chip AS601 form Synochip, that does the image rendering, calculation, feature finding and searching. It provides TTL serial out hence we can connect to any microcontroller or system. The DSP processor has on board FLASH memory which can store 120 finger prints. Thanks to the Adafruit here we have Fingerprint library so that connect this sensor to Arduino as well. The fingerprint identification process has two steps that is

1. Enrolling Fingerprint
2. Matching Fingerprint



- Wi-Fi Module:

The ESP8266WiFi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all WI-FI networking functions from another application processor.

- Web Server:

A web server is a computer system that processes requests via HTTP, the basic network protocol used to distribute information on the World Wide Web. The term can refer to the entire system, or specifically to the software that accepts and supervises the HTTP requests. The primary function of a web server is to store, process and deliver web pages to clients. The communication between client and server takes place using the Hypertext Transfer Protocol (HTTP). Pages delivered are most frequently HTML documents, which may include images, style sheets and scripts in addition to text content.

- WORKING PRINCIPLE & RESULT:

Fingerprint module will be connected to Arduino which will connect to a node. There are several nodes which are connected to a single Central server. At first a student or employee needs to

store his or her fingerprint in the module. After storing or registration when a student or employee places his/her fingerprint over the fingerprint sensor then Arduino will search for id if any image match to that image. If matched then it will send an acknowledgement message through message and email and also will send the attendance to the central server. The attendance will be sent with date and timing to the server.

Attendance will be sent as bellow excel sheet:

	A	B	C	D	E
1	Date	Time	Roll no	Attendance	
2	25-01-2016	16:24:17	0	0	
3	25-01-2016	16:24:17	1	0	
4	25-01-2016	16:24:17	2	1	
5	25-01-2016	16:24:17	3	0	
6	25-01-2016	16:24:17	4	0	
7	25-01-2016	16:24:17	5	1	
8	25-01-2016	16:24:17	6	0	
9	25-01-2016	16:24:17	7	0	
10	25-01-2016	16:24:17	8	0	
11	25-01-2016	16:24:17	9	0	
12	25-01-2016	16:24:17	10	1	
13	25-01-2016	16:24:17	11	0	
14	25-01-2016	16:24:17	12	0	
15	25-01-2016	16:24:17	13	0	
16	25-01-2016	16:24:17	14	1	
17	25-01-2016	16:24:17	15	0	
18	25-01-2016	16:24:17	16	0	
19	25-01-2016	16:24:17	17	0	
20	25-01-2016	16:24:17	18	1	
21	25-01-2016	16:24:17	19	1	
22	25-01-2016	16:24:17	20	0	
23	25-01-2016	16:24:17	21	0	

Sheet1

CONCLUSION

To maintain the attendance system with Fingerprint Recognition. That means using biometric like fingerprint module. As fingerprints are unique in nature.

In this paper, we proposed a system that automates the whole process of taking attendance and maintaining its record in an academic institute. Managing people is a difficult task for most of the organizations, and maintaining the attendance record is an important factor. By our system, we managed to achieve the desired objectives stated earlier. Present available biometric attendance systems are connected in wire, but here we are using wireless connection .Means we are transferring the data using WIFI, which will increase the speed, accuracy and will be less time consuming.

Thus the conclusion is that IOT based Distributed Attendance System will not only enhance our knowledge but this automated system could be adopted by every college to compute the attendance rate& to evaluate the effectiveness of our education system. Further this work can be extended by introducing location means this system will provide the location via GPS, so that location will also can be recorded.

REFERENCE

1. Vishal Bhalla, Tapodhan Singla, Ankit Gahlot, Vijay Gupta, “Bluetooth Based Attendance Management System”, International Journal of Innovations in Engineering and Technology (IJIET), Vol. 3 Issue 1 October 2013.
2. Prashik S. Bhagat, Prof. D. S. Shilwant, Prof. S. P. Kharde, Praful S. Bhagat, Abhijit S. Andure, Prof. Amol A. Shirsath, “Iris based attendance system”, International Journal of Advanced Research in Computer Engineering & Technology (IJARCET), Volume 4 Issue 8, August 2015.
3. Sagar Wale, S.A. Patil, "Indigenous Development of Automated Wireless Fingerprint Attendance System",INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 3, ISSUE 8, AUGUST 2014.
4. Quratulain Shafi, Javaria Khan, Nosheen Munir, Naveed Khan Baloch, "Fingerprint Verification over the Network and its Application in Attendance Management", 2010 International Conference on Electronics and Information Engineering (ICEIE 2010).
5. Q. M. Ashraf and M. H. Habaebi, "Autonomic schemes for threat mitigation in Internet of Things," Elsevier Journal of Network and Computer Applications, vol. 49, no. 1, pp. 112-127, 2015.
6. Vanaja Roselin.E.Chirchi, Dr.L.M.Waghmare, E.R.Chirchi, “Iris Biometric Recognition for Person Identification in Security Systems”, International Journal of Computer Applications, Volume-24-No. 9, June 2011.
7. Deepak Ranjan Nayak. "A Novel Architecture for Embedded Biometric Authentication System", 2008 Second UKSIM European Symposium on Computer Modeling and Simulation, 09/2008.
8. Pradip Patil,Sumit Sharma,R. B. Gajbhiye, "A Study- Impact of Internet of Things (IOT) For Providing Services for Smart City Development", International Journal of Advance Research in Computer Science and Management Studies, Volume 3, Issue 6, June 2015.