

Biometric based Student attendance and time recording and Communication System

^[1] G.Sobha Rani, ^[2] A. Venkateswara Rao
^[1] M.Tech, Embedded Systems, ^[2] Assistant Professor, HOD,
Department of ECE, Sri Sivani Institute of Technology

Abstract: -- The aim of this journal focuses at designing a student attendance and time which could effectively manage attendance and maintaining its records of students at educational institutes like Sri Sivani Institute of Technology. Attendance is notified after student identification. The major challenge task in educational institute is taking the attendance of student on daily basis and maintaining the records. For student identification, a fingerprint recognition based identification system is used. Fingerprints are considered to be the unique to each person and can be regarded as some sort of signature, certifying the person's identity. It's permanent, good anti fake and secure to use. The major advantage of the Fingerprint recognition is that no two persons will have the same fingerprint in this world because of the peculiar genetic code of DNA in each person. The major objective of this paper is very simple to go for paperless attendance recording system to save the environment i.e go for green environment.

Keywords: -- fingerprint, attendance

I. INTRODUCTION

In this Hi-Tech era, there is a great demand to identify and authenticate the individuals. Till now we are totally dependent upon Passwords and Pin Numbers for identification. How secure are passwords? With the numerous passwords that an individual has to remember, they are often forgotten, misplaced, or stolen. Think of how many different passwords you have to remember: computer passwords, internet site logins and passwords, PIN numbers for the ATM and for credit cards, the list goes on. We are arriving at a conclusion that these technologies are not sufficient for the security of an individual as these are hard to remember, easily transferable, easily stolen and there are many weaknesses. Due to these weaknesses biometrics came into existence.

Biometrics is that study of science that deals with personal human behavioural and physiological characteristics and such as fingerprints, handprints, iris scanning, voice scanning, face recognition and signature recognition. These technologies are far more promising than that which is used currently to identify an individual. This paper highlights some of the benefits and the few limitations of using Finger biometrics for authentication. With biometrics it doesn't matter if we forget your password or lose your smartcard.

In this journal we have focused on fingerprint attendance system. Since last two decades in majority of

educational institutions the monitoring of student time and attendance in class room is conventional method by circulating a sheet of Paper for signature of student. This leads lot of disadvantages. The attendance passed around the class, some of the students accidentally or purposely signs another student name (fake attendance) and it takes longer time to get the signature of all students, sheet may not reach to each and every student and also chance of damage of paper. As a consequence of that management can no longer monitor the student's overall attendance record throughout particular system/year. After having these issues in mind we developed a wireless automatic attendance system which automates the whole process of taking attendance and time of student in semester/year. This Biometric fingerprint identification is very popular and is recognized increasingly by people because of uniquely identify person, permanent, good anti fake and easy to use.

II. PROPOSED SYSTEM STRUCTURE

Proposed system consists of one fingerprint module. It is one of the main core parts of the system. This can be moved very easily in class for attendance recording. This sends commands to the controller whenever fingerprint is matched. Microcontroller receives these commands from the finger print module and stores the attendance in SD-card. Keypad is used to send the requests to the controller either enrol the new one or to save the attendance. Terminal is used to enroll student information. TFT display displays the messages related to the commands

received. Programming will allow compiling attendance in different formats as per the requirement.

III. SYSTEM HARDWARE DETAILS AND CIRCUIT DIAGRAM DESCRIPTION

Basic block diagram of system is shown in below. It consists of fingerprint Scanner, microcontroller, SD card, Real time clock, Serial terminal and SD Card.

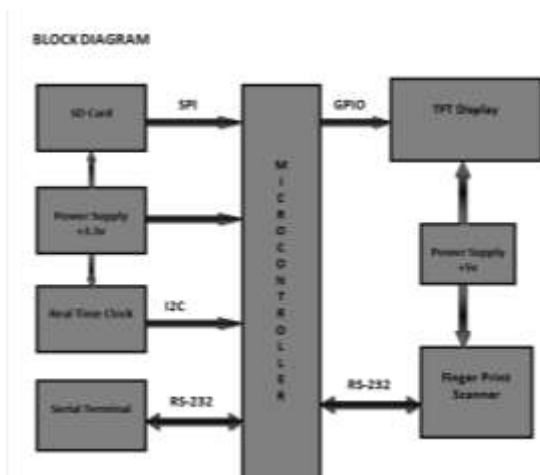


Fig1: Block Diagram of Real Time Attendance System

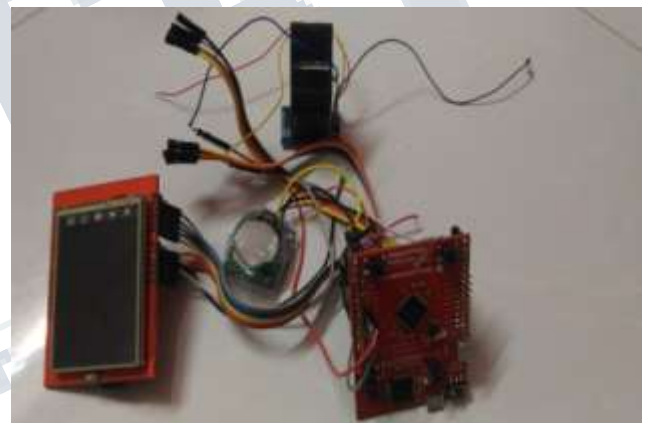
a) Very less verification speed of 0.3 sec are the key features of this module. During enrolling user will enter two images and system will process two time finger images, generate templates and store it. During matching user will enter fingerprint through scanner and system will generate template. In return system will generate result as success or failure.

b) Microcontroller TM4C123GH6PM is selected for this system. The microcontroller is actually responsible for all the process being executed. The main task is to continuously scan the data available from fingerprint scanner, to display the messages on the TFT display, to communicate with the correspond sd-card. These microcontroller are designed around an ARM Cortex-M processor core which provides the core for a high-performance, low-cost platform that meets the needs of minimal memory implementation, reduced pin count, and low power consumption. In short we can say that the complete intelligence of the project is in the software code

embedded in the microcontroller. Where miniaturization is key requirement, these microcontrollers are ideal as they have tiny size and low power consumption and delivers outstanding computational performance and exceptional system response to interrupts.

c) Microcontroller has eight serial ports here we using only two; one is used for serial terminal and second is used for Fingerprint module connection.

d) TFT DISPLAY: Thin film transistor (TFT) displays have drastically dropped in price while dramatically improving in performance. They are the de facto standard to the point where it is not only expected, it is demanded that any modern user interface be full color, brightly backlit, touch sensitive, and have high video speeds and a good viewing angle.



Output

SNO	Student	Time
1	Ramesh	09:22:22
2	Suresh	09:24:22
3	Kasi	09:22:26
4	Raghu	09:25:30

IV.CONCLUSION:

Biometric is an emerging area with many opportunities for growth. Biometrics is widely being used because of its user friendliness, flexibility in specifying required security level and long term stability. The technology will continue to improve and challenges such as

interoperability solved through standardization. This will lead to increase in the market adoption rate and the technology will proliferate. Possibly in the near future, you will not have to remember PINs and passwords and keys in your bags or pockets will be things of the past.

In this paper, I have presented a fingerprint-based attendance management system. The proposed system will make way for perfect management of students and staff attendance and produce more accuracy. Fingerprint recognition is universally applied and is very relevant in an institute. This system can be implemented in academic institutes for better results regarding the management of attendance. This system will save time and reduce the amount of work of the administration.

Future scope:

The future of biometrics holds great promise for law enforcement applications, as well for private industry uses. Biometrics' future will include e-commerce applications for extra security on the checkout page, and biometrics will guard against unauthorized access to cars and cell phones. In the future, biometric technology will further develop 3-D infrared facial recognition access control, real-time facial recognition passive surveillance, and visitor management authentication systems. Already A4Vision, a provider of 3D facial scanning and identification. Software uses specialized algorithms to interpret the traditional 2D camera image and transfer it into a 3D representation of a registered face. This makes it almost impossible to deceive the biometric system with still photos or other images. Strengthening existing biometric innovations for future growth all of these security innovations will make biometric technology more accurate and make its usage more widespread.

REFERENCES

1. Mohamed Basheer K P , Raghu C V , "Fingerprint Attendance System for classroom Needs", India Conference(INDICON) , Annual IEEE 2012.
2. Jain LC, Intelligent Biometric Techniques in Fingerprint and Face Recognition, CRC Press, 1999
3. Munir MU, Javed MY; "Fingerprint Matching using Gabor Filters"; 2005
4. MurizahKassim, HasbullahMazlan, NorlizaZaini, Muhammad KhidhirSalleh "Web-based Student Attendance System using RFID Technology" 2012 IEEE.
5. "How does a fingerprint sensor work" Online Available: http://wiki.answers.com/Q/How_does_a_fingerprint_sensor_work [Accessed: Sept. 15, 2013]
6. NurIzzatiZainal, KhairulAzamisidek, Teddy suryaGunawan, HasmahMansor Mira Kartiwi, "Design and development of portable classroom attendance system based on Arduino and fingerprint Biometric", IEEE 2014 international conference on information and communication Technology
7. LI Jian-po, ZHU Xu-ning, LI Xue, ZHANG Zhi-ming "Wireless Fingerprint Attendance System Based on ZigBee Technology" 2010 IEEE
8. L. Rajasekar, S. Vivek "Wireless Fingerprint Attendance System using ZigBee Technology" International Journal of Power Control Signal and Computation (IJPCSC), Vol3. No1. Jan-Mar 2012
9. Zhang Yongqiang ,LIUJi, "The design of wireless fingerprint Attendance system", IEEE 2006 International conference on communication Technology
10. Maltoni D, Jain AK, Maio D, Prabhakar S, Handbook of Fingerprint Recognition, Springer, 2004