A PROPOSED METHOD FOR SMART NOTICE BOARD AND e –ATTENDANCE MONITERING USING ARDUINO TECHNOLOGY

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Abstract : In present scenario, the class room is equipped with some technologies which termed as smart class room but these are not sufficient in this fast growing modern world. The developed countries are attaining the developed placed only due to their modern class room system in which the modern and youngest minds are developed. But in India we are very rarely having that modern class room system. To develop our class room as a modern one, our proposed system suggests some ideas which are better than available smart class system in our country. The main advantage in this is we can implement the smart class room is economical and precision. The smart class system consists of automatic attendance monitoring system and digital notice board. When students match their fingerprint, the Arduino micro-controller ensures their presence of the student and attendance is monitored. After the matching process, the controller only counts the matched finger is noted as present and remaining noted as absent. The count of the presented students and absented students are displayed though LCD display which is interfaced with Arduino. In addition, the Arduino can be linked with Computer by using RS232 module to transfer the attendance copy of the students for further purpose. In digital notice board GSM module is used to receive the information and displayed by LCD screen.

IndexTerms - **Arduino micro controller, GSM modem, LCD display, RS232 converter, Keypad.**

I. INTRODUCTION

Now, many classrooms have equipped with variety of advanced information devices. This type of classroom is named as smart classroom system. In this novel there are some techniques which make our country as developed country through smart class system. Learning styles of a student are changing in this fast growing world. Traditional lecturing styles require to be reviewed to determine their suitability to meet the needs of student learning styles. As the world around us changes, it is essential that educators review their teaching methods to ensure there is an appropriate match to students learning styles. This novel smart class room system consists of automatic attendance system by using finger print and streaming the data through Wi-Fi from mobile phones and tablets to the display devices like projector by using chrome cast. More than 90% of people in all over the country using smart phones. The emergency and growth of e-learning are probably the most prominent changes in the field of education.

II. LITERATURE SURVEY

Example of Jungwoo Lee [1] Information and communication technology (ICT) is affecting every part of our society. Education is not an exception in this trend, but its impact is found to be fragmented a best. The purpose of this study is to conceptualize and develop the idea of smart classroom that integrates emerging information technologies with novel content and newly advancing pedagogies. System requirements are elicited from popular but advanced pedagogical cases and the system architecture is proposed based on the analyses of such requirements. The analyses are focused around pedagogies under development, and future applications of the proposed system are discussed at the end of this paper. Example of Unnati A. Patel [2] the proposed idea having some tool to control students' attendance. However, Current manual way of taking student attendance is not an efficient way since there will be spent much of time for calling students names and putting marks like "presence" or "absence" if the class is a lecture class, and in this class at least 5 groups are presented. Moreover, some students may call his/her friend as "presence" even though this student is currently absent. After thinking all these issues, author of the following research paper decided to create a system that makes easier to check students' attendance automatically. The system is based on RFID technology, and in this paper, details of this system are presented. The system can be easily accessed by the lecturers via the web and most importantly, the reports can be generated in real-time processing, thus, providing valuable information about the students.
Example of NivethaS.R [3] proposed design of ARM controller with GSM technology, entries can be documented and a record may be maintained for future use by using visual basic. The controller has internal a real time clock used for synchronization of data. A resistive touch screen is used to access the previous notices and also progress details. The monitoring system consists of an image

sensor which captures the images for the specified amount of time and the images can be transferred through an USB port to a PC for storage purposes.

III. FEATURES OF SMART CLASS

- Smart classes help professors to meet new challenges and developing students' abilities and performance.
- Smart classroom enables teachers to access multimedia content and information that can be used for teaching students more effectively.
- Smart class enables professors to express their views and ensure that every student understands the undertaken concept which ultimately affects his achievement.
- Achievement is possible only if concepts are clearly understood. It is possible though smart class where all domains of knowledge are affected.
- A well designed module of smart class allows a student to visualize the concept much better than static images.
- Smart class teaching is a step towards development where students' achievements are highlighted.
- Make learning an enjoyable experience for students.

IV. PROPOSED SYSTEMS

Every organization whether it be an educational institution or business organization, it has to maintain a proper record of attendance of students for effective functioning of organization. Designing a better attendance management system for students so that records are maintained ease and accuracy was an important key behind motivating this paper. This would improve accuracy of attendance records because it will save valuable time of the students as well as teachers or lecturers or professors in every school, colleges and universities. Recording and monitoring the attendance of students is an area of administration which requires significant amount of time to get necessary data. At present available technology are more time consuming and out-dated, and this may improve by applying technology and designing an efficient attendance system by using "Finger Print" which is designed by our self and it is a low cost.

V. BACKGROUND OF THE PROPOSED DESIGN

The Smart Class includes two main digital facilities, Attendance monitoring system and Wireless Automatic GSM based E-Notice Board. Those two systems integrated with single Arduino Uno R3 Microcontroller. For Attendance system it is done by interfacing R303A series finger-print identification module with arduino microcontroller, through matching the student's fingerprint with arduino microcontroller attendance is monitored. The Wireless Automatic GSM Based E-Notice Board is processed by interfacing GSM module with Arduino board. The information can be directly transferred via GSM network, the arduino microcontroller which receives information from GSM module and displayed in LCD Screen. Fingerprint processing includes two parts fingerprint enrolment and fingerprint matching. Enrolment includes adding the new student and feeding their details at the first time to the arduino micro-controller. When enrolling, student needs to enter the finger two times. The system will process the two times finger images, generate the details of the finger based on processing results and store the information. In proposed system, the student's details are enrolled in the arduino micro-controller. When students match their fingerprint, the arduino microcontroller ensures their presence of the student and attendance is monitored. After the matching process, the controller only counts the matched finger is noted as present and remaining noted as absent. The count of the presented students and absented students are displayed though LCD display which is interfaced with arduino. In addition, the arduino can be linked with Computer by using RS232 module to transfer the attendance copy of the students for further purpose.

The whole arrangement divided into two process Attendance monitoring system and Electronic Notice Board System. In attendance monitoring system, students roll number is synchronised with finger print reader. The finger print reader is used to scan the student's fingerprint and matches the student roll number which stored in Arduino micro-controller. The keypad is used as input for detailed information like time, date of presence and total number of present and absentee's records. The GSM Module is used to receive the information through GSM network. The LCD is used to display the processed information. The RS232 converter is used to connect the arduino microcontroller with PC through USB port for transferring the attendance record to PC.

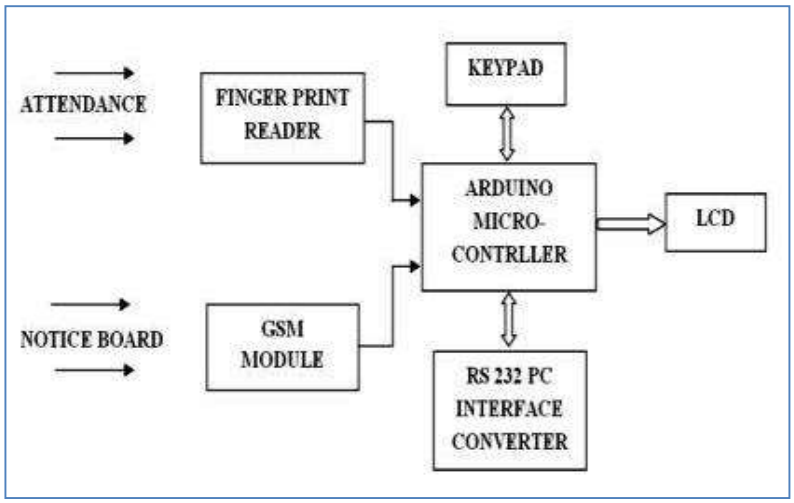

Fig. Block diagram for attendance and notice board

Hardware used in the Attendance monitoring system and Wireless Automatic GSM based E-Notice Board comprises of the following components:

1. Arduino Micro-controller
2. R303A Series Fingerprint Identification Module
3. Keypad
4. LCD Display
5. PC Interface Switch
6. GSM Module

1. *Arduino Micro-controller Arduino* : is a single-board microcontroller, intended to make the application of interactive objects or environments more accessible. It's an open source physical computing platform and a development environment for writing software for the board. Arduino can be used to develop interactive objects, taking inputs from a variety of switches or sensors, and controlling a variety of lights, motors, and other physical outputs. Arduino has some advantages for educational and interested recreational over other systems like Inexpensive, Open source and extensible software, extensible hardware.

2. *R303A Series Finger-print Identification Module* :Finger print processing includes two parts namely fingerprint enrollment and fingerprint matching (the matching can be 1:1 or 1: N). When enrolling, user needs to enter the finger two times. The system will process the finger images two times and generate a template of the finger based on processing results and store the template. When matching, user enters the finger through optical sensor and system will generate a template of the finger and compare that with templates of the finger library. For 1:1 matching, system will compare the live finger with specific template designated in the Module; for 1: N matching, or searching, system will search the whole finger library for the matching finger. In both circumstances, system will return the matching result, success or failure.

3. *Keypad* : A keypad is a set of buttons arranged in a block or "pad" which usually bear digits, symbols and usually a complete set of alphabetical letters. If it mostly contains numbers then it can also be called a numeric keypad. Keypads are found on many alphanumeric keyboards and on other devices such as calculators, push-button telephones, combination locks, and digital door locks, which require mainly numeric input.

4. *LCD Display* : LCD (Liquid Crystal Display) screen is an electronic display module which find a wide range of applications. A 16x2 LCD display shown in fig 6 is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LED. The reasons being: LCDs are economical; easily programmable and have no limitation of displaying special & even custom characters. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD.

***5. PC Interface Switch* :** In order to update the details of people, PC Interface Switch is used to synchronize the information from personal computer. It is used to change the mode of arduino micro-controller to RS232 converter. Through interface switch RS232 converter can be connect with USB port of personal computer.

6. GSM Module : This GSM module is a Modem that can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. Applications like SMS Control, data transfer, remote control and logging can be developed easily.The modem can either be connected to PC serial port directly or to any microcontroller through MAX232. It can be used to

send and receive SMS or make/receive voice calls. It can also be used in GPRS mode to connect to internet and do many applications for data logging and control. In GPRS mode you can also connect to any remote FTP server and upload files for data logging.

VI. CONCLUSION

Our proposed Smart classroom increases the precision of work and reduces the man work. Due to its economic cost it can be easily implemented in every class room. By digitalizing those system, better infrastructure can be achieved and chances of errors are nulled. In Future, WiFi-Shield can be interfaced with arduino microcontroller to stream presentation from mobile phones and tablets to the display devices like projector.

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