

Attendance Recording System and Analysis

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Abstract

For recording student's attendance, conventional methods are still adopted in many institutions, where the faculty call out the student names/roll number one by one and mark their presence or absence in an attendance register. The whole semester/year attendance is entered in the attendance register and at the end of the entire session; the attendance percentage reports are generated. This method of taking attendance and then feeding attendance in a computer system for attendance calculation is laborious and increases the manpower requirements. It is also prone to errors in the feeding of attendance, as large amount of data is to be entered in a shorter time period and accurate in the proposed system implement design will give us analysis of student attendance is been done through the system these system is implement by using raspberry pi and store the attendance record on webpage.

Index Terms – Raspberry Pi-3, fingerprint sensor, webpage, Display.

INTRODUCTION

For recording students attendance, conventional methods are still adopted in many institutions, where the faculty call out the student names/roll number one by one and mark their presence or absence in an attendance register. The whole semester/year attendance is entered in the attendance register and at the end of the entire session; the attendance percentage reports are generated. This method of taking attendance and then feeding attendance in a computer system for attendance calculation is laborious and increases the manpower requirements. It is also prone to errors in the feeding of attendance, as large amount of data is to be entered in a shorter time period and accurate in the proposed system implement design will give us analysis of student attendance is been done through the system these system is implement by using raspberry pi and store the attendance record on webpage.

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LITERATURE

DhirajSunehra, V. SurenderGoud used raspberry-pi controller with Xbee transmitter and receiver they also webpage implementation to store the attendance at drive an attendance recording and consolidation system (ARCS) is implemented using Arduino and Raspberry Pi microcontroller boards. Arduino is used to implement the attendance recording device (ARD), whereas Raspberry Pi is used as a Web server[1].

SanamKazi, Farhan Pasha, FarzanaGorme, Hozefa Bata are used raspberry pi in the attendance recording system. based on RFID (Radio Frequency Identification) cards but issue of proxy may occurs due to each student is have an separate card [2]

Kiran, P. P. , Kumar, R Image processing based student attendance System face recognition Raspberry pi is used for face detection and face recognition and using the face template the can detect and record the attendance of students[3].

DhvaniShaha, VinayakBharadi how biometrics are used to recognize the student it may be face detection, iris recognition, fingerprint sensor, etc[4].

Although other methods refers, such as fingerprint identification can provide better performance in addition with fingerprint identification the data analysis is been done and the date is store in the cloud (webpage) The proposed system is design as per to reduce the drawback of other refer papers and it provide user friendly, accurate, less cost, higher efficiency, and more detail analysis is done.

BLOCK DAIGRAM

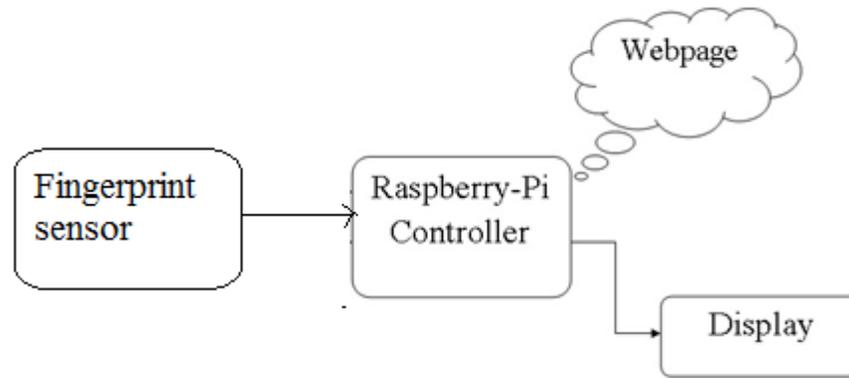


Fig.1 Block Diagram of Attendance Recording And Analysis.

Block diagram contain basically 4 block are

Fingerprint Scanner

Fingerprint Scanner is basically a biometric sensors that make sense that fingerprint of the student is scan and match with data based if the data is match with saved database then the attendance is been recorded by the controller.

The ginger print scanner generally

Raspberry-Pi 3 Module

Raspberry pi -3 module is main controller of the system which is have BCM2837 processor which have higher processing speed , contains a BCM2837 processor (as used on the Raspberry Pi 3), 1Gbyte LPDDR2 RAM and 4Gbytes eMMC Flash. Quad core Cortex A53 with dedicated 512Kbyte L2 cache in BCM2837. All IO interfaces and peripherals stay the same and hence the two chips are largely software and hardware compatible

Feature:

Hardware

- Low cost
- Low power
- High availability
- High reliability
- Tested over millions of Raspberry Pis Produced to date
- Module IO pins have 35u hard gold plating

Software

- ARMv6 (CM1) or ARMv7 (CM3, CM3L) Instruction Set
- Mature and stable Linux software stack
- Latest Linux Kernel support
- Many drivers upstreamed
- Stable and well supported userland
- Full availability of GPU functions using standard APIs

Display

Here the LCD (liquid Crystal Display) which is of 16*2 is Used to display the Attendance Recorded Acknowledgment the LCD Display is Displaying the Character (A-Z) or (a-z) and the number (0-9) controller convert the standard ASCII value of different Character and Number and provide it to display to print that character or set of character to display for printing it on display

Webpage

The webpage is storing the attendance record in to the cloud in the webpage heir is Some GUI windows for handle the page by user the master use can access all the data and record he have an all rights and the other user have read rights only to access the all students record .

HARDWARE AND SOFTWARE TOOL

Hardware

Finger print Sensor R305 : to sense the finger print data and convert into a fingerprint template

Raspberry pi 3 Module :Quad core Cortex A53 with BCM2837 processor. that's controls and monitor all the system nature

HDMI To VGA converter: to connect the Raspberry pi -3 kit to the monitor or VGA display

Memory Card: memory Card is Hard Drive where the raspbian OS is been extracted to run all the peripheral booting of this memory card is must essential

Power Supply cable: it is power supply cable where the all hardware is run frequently the input of Raspberry pi is in between 3.3v to 5v .

Software

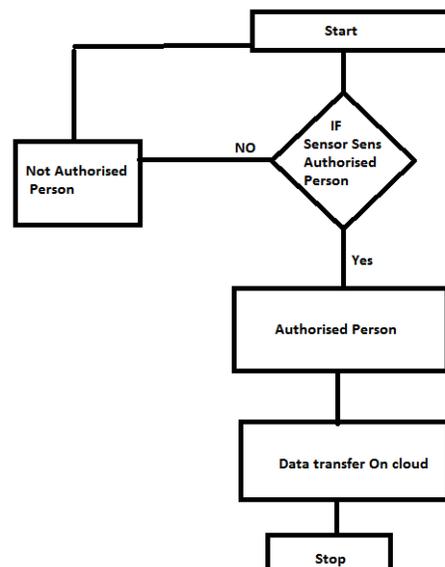
- Python
- Webpage implementation (.html) ,cloud
- Linux(Ubuntu)

RESEARCH METHODOLOGY

The system is generally have an straight approach to the User friendly system in which heir is a fingerprint scanner is a biometric device that generate a biometric binary sequence for each unique user so the user or student is identification is easy. The data of scan student is store in database every time when the student is scanning the finger the scan and matches the finger print data with the saved database if the template are matches then that is valid student so controller take action to record their attendance and display is on LCD Display.

Else the student is invalid then again Scanned or the display indicated the attendance is not been record .the record information is through LAN connection connect with the Cloud and Store the data on Cloud for future analysis of student. Individual student attendance analysis is possible by in these system.

Flowchart



.Fig.2 Flowchart of Attendance Recording and Analysis.

Proposed System Algorithm

- STEP 1: Write Raspbian OS on to the SD card and fix the card into the SD slot
- STEP 2: Fix the entire hardware setup
- STEP 3: Enroll the student data in to system database
- STEP 4: Scan fingerprint of student
- STEP 5: Compare With Database
- STEP 6: Store the data into the file system
- STEP 7: Display message to LCD
- STEP 8: Send recorded Data to Webpage
- STEP 9: Track the attendance of the student

Operation Principle

Fingerprint processing includes two parts: 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 two time finger images, 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 it 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.

4.4 Advantages of Proposed System

- 1) It will save time,
- 2) manual efforts are less and one-time cost for implementation
- 3) Attendance tracking is completely customizable and using the Raspberry Pi all the students entering the classroom and fingerprint sensor card will be automatically marked present and there attendance will be marked in the database for that particular class on that particular day.
- 4) The data is passed to the database connected to Raspberry Pi system which will ensure complete accurate data.
- 5) Records are confidential and kept safe.
- 6) Report is generated brief interval of time or monthly record is maintain in .xls format for improve accuracy
- 7) For Each Student is able to generate record for particular class particular month.

RESULTS AND DISCUSSION

The Attendance recording and analysis will serve as a useful approach to the system and hence will prove more accurate, cost effective and provide ease of implementation and user friendly, and will overcome the disadvantages of the un-conventional method as well as will help to eliminate paper work the data is accurate analyze by the system where the attendance of student and the will track Class wise and monthly record of each student is tracked by the sytem and all the data will store at the cloud or at the web.

Thus we have develop an efficient and reliable attendance recording system and analysis by using Raspberry pi which is constant providing output and errorless in the nature

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