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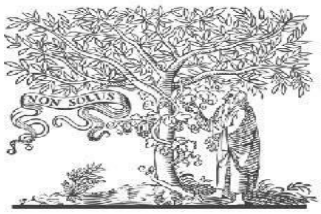

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AN IOT BASED ATTENDANCE SYSTEM USING PI CAM AND RFID CONTROLLER

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ABSTRACT:
Education system in our Country is mostly focused on attendance. Mostly during graduation and post-graduation. Attendance shows how student is responsible for his education. This project is mainly about the attendance system. In past attendance taken in a traditional way. In past many attendances system has come into existence. Many of them are single authentication system only ("means it uses single sensor to get attendances"). In present many attendances system has two sensors for capturing attendances example is "attendances system using biometric and RFID controller". In present system disadvantage is that if any sensor fails to capture data, then it will be problem for management for getting attendances. If user gets hurts in hand, then it will be hard to use biometric system for attendances. Then user uses traditional way for attendance. We are using esp32 camera to capture image of student or employee. If user get any hurt in face also it can capture face to get attendances. Else we can use RFID card for attendances. RFID card acts as a backup for attendance. Materials used: Node MCU or ESP32, ESP32 camera, RFID controller.

KEYWORDS: Attendance Management System, RFID Controller, ESP32 camera, Face detection, Wi-Fi module.

INTRODUCTION:

According to oxford university, attendance means it is a record of number of people present to an event or class or something. If they are in the event or place, then they are present. It will act as evidence showing that they are present in the event or place.

Attendance is maintained by every school and college. A person need not to check every time ais student goes in and out of the college. Graduation college sends attendance of every student to university. In present for every student college attendance is mandatory. In old days attendance is taken in traditional ways ("that is using paper") which is time consuming and less efficient. Sending attendance record manually to university is more time and main drawback is that it takes more memory to store all the data and more time for computerise it. Faking the attendance may take place in some college or some student will do.

Main solution for solving these drawbacks is an IOT based attendance system which captures data in digital way. Using it we store attendance in excel file and college database. It is easy to send attendance to university via mail or giving access to database. So, it is the best solution.

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LITERATURE REVIEW:

There are many attendances system came into existence. Some of them are single input devices and some of them are multiple input devices. But most of them are wired system. In 2008, the use of a computerized attendance system is proposed by Nucleus Research, which can eliminate repetitive work, human involvement, human data entry mistake. This system is going to increase reduced payroll inflation, productivity and reduced payroll error, retirement of legacy systems, reduced overtime, Elimination of paper costs.

IOT BASED ATTENDANCE SYSTEM:

[1] IOT means internet of things. IOT based attendance system uses internet to transfer the data from device to computer as excel sheet or stored in database. It records time and date. Attendance system are of two types. One is physical attendance system and second is behavioural system. Computerised verification process using attendance system includes behavioural system or physical system. Registering the attendance by proxy will not be happened.

Behavioural attendance system:

[2] Behavioural system uses sensors like biometric sensor, optical sensor, camera, scanners etc. behavioural system captures data like image, palm print, fingerprint, palm geometry, retinal scan, face recognition etc. The main drawback is if many damage happens the fingers or palm or face or eyes then recognition will not take place. Attendance will not be recorded. Because of this faking of attendance will not take place as the attendee should present physically.

Physical attendance system:

[3] Physical attendance system uses keyword, card, signature etc. the sensors used in the system are RFID module, touch pad, keyboard etc. In this faking of attendance take place mostly by giving to other person to mark attendance. The physical attendance system is manual attendance recording system which has many drawbacks. To solve all drawbacks many systems came into existence. One of them is digital signature attendance system. Which solved maximum of drawbacks.

[6] Single input attendance system is single attribute device which is either behavioural or physical system. This is less efficient than multiple input attendance system because single attribute takes single input from attendant. If sensor fails, then device fails. So single input attendance system is less efficient the multiple input attendance system.

[7] Multiple input attendance system is system which takes multiple input if it is necessary from the attendant. This system is more efficient than single input attendance system because its multiple input from user if any sensor fails in it. It contains both behavioural and physical system. If behavioural system sensors fail the physical system sensors will acts as an alternative.

In this system, circuit is sensitive. So, it should be handled carefully. If any part of it fails to work, then whole system fails.

RFID (Radio Frequency Identification) card with an embedded transponder communicate with a signal to a reader near the door. The reader will detect the unique ID and send to the database to collect the name of the user of the card and marks the attendance.

WIRELESS ATTENDANCE SYSTEM:

[4] Wireless attendance system is attendance system which uses Bluetooth or Wi-Fi to transfer data from device to computer or cloud in form of

excel sheet. There are two types of wireless attendance system. They are single input attendance system and multiple input attendance system.

[5] Present organization takes attendance by using login time. When the employee login into system the time will be recorded until he logout from system. This is the most trending attendance system in present organization. The major problem in this system is any with login id and password can login into system. The proxy of attendance can take place.

[8] The wireless attendance system which is used in schools and college is AI attendance system which is used in covid time. In this system it uses camera of phone or laptop to mark the attendances of student. In this system the proxy of attendances will not take place. Most of the schools followed this system during pandemic time.

[9] Wireless attendance system is a branch of IoT based attendance system. In this hardware devices is not used in it. It uses Bluetooth, Wi-Fi, or internet to mark the attendance. Mostly in present generation android apps are used to mark the attendance. In this system, android application takes all permission for gaining access to the system. When the attendant opens the application location of the attendant is stored in database and he or she can mark the attendance

.

The existing systems are bio metric attendance system, face detection system, palm detection system, etc.

S NO	existing attendance system	Category	pros	drawbacks
1	Manual attendance system	Wireless attendance system	Manual time and attendance measuring systems don't require any hardware or software, making it an initial saving	It consumes lot of time. After recording attendances, we should store in database which also takes lot of time to computerise and lot of storage will be used. Proxy attendance may happen.
2	Access card reader system	IoT based smart physical attendance system	It is easy to carry as id card. It is easy for recognition.	If the system fails, then it will not register the attendance.
3	Biometric authentication system	IoT based smart behavioural attendance system	The proxy attendance will not be taken, and it is easy to register his attendance.	The main drawback is that if a person get hurts his hand, then he can't register his attendance.
4	Face detection system	IoT based smart behavioural attendance system	Face recognition is easiest way to register the attendance.	Due do hurts on face then face detection will complicated and takes lot of

				time.
5	voice recognition system	IoT based smart physical attendance system	Proxy attendance will not be taken and searching accuracy is good.	It consumes lot of space and time for analysis. It is not efficient for dumb person.
6	Retinal recognition system	IoT based smart behavioural attendance system	In this accuracy is efficient and exactly accurate.	It takes more time for analysing the input. The sensor cost is too high. Because of this, it is less efficient.
7	Palm detection system	IoT based smart behavioural attendance system	Proxy attendance will not take place because every student has unique geometry and print of hand.	Time complexity is more and because it takes large for analysis. If a person is handicap, then it will be difficult.
8	Fingerprint recognition system	IoT based smart behavioural attendance system	It is accurate because every person has their own unique fingerprint. There will be proxy attendance in it.	It is less efficient.
9	Mobile based attendance system	Wireless attendance system	It easy to mark using mobile by sending SMS.	Sometimes may be received by admin or not due to network issues.

CONCLUSION:

The reason to build this system is that in present existing system they many multiple input attendance systems. Most of them are fingerprint incorporated with RFID card. The main drawback of the system is that sensor may read the fingerprint or may not. So mostly attendants use card to mark attendance. But none of them uses camera for attendance, which is more efficient and more time saving, storage saving. It is also cost efficient. In the future, new advanced sensors will develop, and further research will do in other field taking it as a reference.

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