

“REVIEW AUTOMATED STUDENTS ATTENDANCE MANAGEMENT SYSTEM USING RASPBERRY-PI AND NFC”

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ABSTRACT: Now a day's speed and efficiency is what needed to reduce the time of work and performance of an individual or a system. Hence we are presenting an automated attendance management system using raspberry pi and NFC which is a smarter and more efficient way. This will help in speeding up the attendance monitoring system in schools/colleges/universities or in small business also and thereby reducing the time for taking attendance is becomes easy by using this. The main active components of the paper are a Raspberry Pi, which is a single-board micro-computer, and an NFC tag reader. NFC (Near Field Communication) technology allows information to be read ,write and exchanged over short distances using wireless communication.

Keywords: Automated Attendance, Raspberry Pi, Facial recognition, NFC.

1. INTRODUCTION

Attendance monitoring system is very important process in almost all the organization and Institutions. Now a days there are two types of systems are available first is manual and second is automated. The mostly used method for taking attendance is totally manual based i.e. by using sheets of papers or books. Sometimes the attendance sheet could be lost because of this method and may easily allow for the impersonation. This method is time consuming hence for reducing this weaknesses, there is a need of an automated and reliable system. Due to our manual attendance system lot of time is being wasted because of calling each student number and name and also the teacher has to do lot of paper work and maintaining that paper sheet is quite difficult. Sometimes the problem of illegal attendance is faced. So it became necessary to do all this online and automated. Biometric authentication is one of the most popular and accurate technology. We can do this using biometric ideas or by the NFC tags with a unique tag provided to each student.

Now, day by day the world becomes digitize means we are using automatic systems which can save times. Similarly we are changing the way of attendance monitoring system from manual to an automated. The automated attendance system may use bar-codes, electronic tags, biometric and touch screens in place of papers.

2. RELATED WORKS

Current Networked and mobile technologies are developed by providing more methods which is supporting for children's in their transitions between home and schools [3]. For example Children's can travel securely by using location system [4]. "Giuliano Benelli and Alessandro Pozzebon" they are projected and developed a paper for parking an automobile an automatic payment system is offered supported NFC [12]. We saw that face recognition is a technique and is better to replace the biometrics system effectively. In face detection we can store the captured images of the students and which is stored in the database of the system. We are not using biometric attendance because it is costly and it requires extra human works and consumes the more time. Actually the biometric attendance management system uses the iris recognition and thumb

scanning. We can access the facial recognition by the support of camera and we don't require any other accessory and simply attendance is marked. We perform all these task by performing algorithms [2]. In 2014,"G. Senthilkumar, K. Gopalakrishnan, V. Sathish Kumar" they developed an associate degree embedded image capturing system victimisation Raspberry Pi system [10]. "L.ARUNKUMAR and A.ARUN RAJA" in might 2015 projected a paper to debate on the standardized authentication model that's capable of extracting the fingerprints of individual and store them [7]. In 2012, "Mohammad Umair Yaqub" proposed a module for school students World Health Organization have to be compelled to regulator their NFC alter phone with teacher phone before the lecture and when the lecture teacher transfer group action on the server [8]. In 2013,"Unnati A. Patel" projected a system within which she uses RFID technology for the group action of scholars in classroom [6]. In 2014," Dhiraj.R.Wani, Tushar.J.Khubani, Prof. Naresh Thoutam" they proposed a system throughout the automatic attending management system is finished with 'Raspberry Pi' and 'NFC' with face recognition. If NFC tag and face recognition results accessed then the attending is reported else not reported [11]. "Jomon Joseph, K. P. Zacharia" projected paper within which they uses face recognition for the validation purpose particularly just in case of the scholars group action. Today's attendance system is monotonic and time consuming. It stores the all recognized data into the database of the system and is very useful and it reduces the time and also it detects the face of a person from 2 foot or a lot of aloof from the camera position. [9]. "Karthik Vignesh E, Shanmuganathan S, A.Sumithra, S.Kishore and P. Karthikeyan" they proved that how biometric is used for attendance management system and is useful for the students as well as the staffs members[13]. Pritish Sachdeva and Shrutik Katchii in 2014 they proposed a review paper on Raspberry Pi in that they discuss about Raspberry Pi and the project that can be implemented using Raspberry pi[5].

3. ANALYSIS

There are some techniques are available and below table 1 shows the strength and weaknesses of each technique also they can compare with each other.

Table 1: Analysis of different techniques

Domain	Techniques	Advantages	Limitations
Biometric	Finger printing	<ol style="list-style-type: none"> 1. Fingerprinting is an excellent technique for checking our backgrounds also it is widely accepted in forensic labs. 2. In fingerprinting there is relatively low false rate of rejection and also false rate of acceptance when used in low incidence of outliers sometimes gender is an issue in a large group. 3. Lots of vendors and solutions are available. 4. Fingerprinting technique has the ability to scan and verify numbers of fingers at the same time. 	<ol style="list-style-type: none"> 1. Fingerprint is not as exactly as iris recognition because Fingerprint false obtain rate varies to vendor, and is relatively 1 in 100,000. Iris realization false accepts rate is 1 in 1.2 million statistically. 2. Eye recognition performs in a high speed environment and it has a single task, whereas fingerprint technique searches takes more time and false rate is high in fingerprinting 3. The long association of fingerprints with coronals made this biometric a troublesome ritual of authentication to some people. 4. Most systems require physical influence by a scanner device that needs to keep clean.
	Eye/Iris recognition	<ol style="list-style-type: none"> 1. Explain highest accuracy: iris recognition has no false matches over two million cross-comparisons, accordingly Biometric device to Test Final Report (19 March 2001, Center for Mathematics and Scientific Computing, National Physics Laboratory, U.K.) 2. Capacity to handle almost large populations at high speed. 3. Convenient: all people need to look into a camera for few seconds. A video image is taken and stored which is non-invasive and inherently secure. 4. The iris itself a steady throughout to person's life physical characteristics of the iris don't change with age. 	<ol style="list-style-type: none"> 1. As new technology is getting better and better many James Bond gadgets like Duplicate Eye lens is available. 2. As eye is the most sensitive part this may damage the retina of eye. 3. Transplantation of Eyes is possible so may lead to the security issue.
Open-CV	Facial recognition	<ol style="list-style-type: none"> 1. Implement a first level "scan" within an extremely large, low-security situation. 2. Easy to deploy, also can use typical CCTV appliances integrated with face recognition software. 3. Passive technology does not require user cooperation and works to a distance. 4. May be adequate to help high quality images in an existing database. 	<ol style="list-style-type: none"> 1. Lighting, age, glasses, along with head/face cover all impact false reject rates. 2. Even in surveillance applications, lower accuracy results to multiple contender occurrences in large populations. As a result, secondary processing is required to surveillance of operations. 3. Privacy concerns: people do not always know when their picture/image is being captured and actuality searched to database — or worse, being enrolled in a database. 4. Can be used without explicit opt-in permission.
NFC/RFID Technology	Tags	<ol style="list-style-type: none"> 1. Great convenience to the user, because the data exchange is completed by bringing two NFC enabled devices together. 2. Versatility 3. Reduces cost of an electronic issuance. 4. Secure communication. 5. No special software. 6. No search and pair procedure. 	<ol style="list-style-type: none"> 1. The system has a limitation they can be operated only with those devices under short range around 10 cm. 2. The transfer rate of data is very less and about 106kbps, 212 kbps to 424kbps. 3. Can be costly to merchant companies to initially adopt this technology.

4. CONCLUSION

If Attendance management system using raspberry Pi and NFC is automated and monitored without any wastage of time i.e. the time used for roll calls and pronouncing each student's name properly can be eliminated. It provides implementation of new technology in schools, colleges, etc where attendance is necessary to achieve an overall attendance of an individual student automatically without any calculation from attendance sheet. It is the most highly secured authentication system because of NFC tag and facial recognition. No illegal attendance by other individuals because of this face authorization. Hence, this system must be implemented in each sector where attendance plays an important role. This is latest and the smartest technology in the world of automation. .

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