WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

ATTENDANCE SYSTEM USING FACE RECOGNITION AND CONTACTLESS THERMAL SCREENING

Sudheer B[1], S Rahul[2], S Manoj[3], Mrs. Vishalini Divakar[4]

[1,2,3]UG Students, Department of Electronics and Communication Engineering, K S Institute of Technology, Bangalore, Karnataka, India
[3]Assistant Professor, Department of Electronics and Communication Engineering, K S Institute of Technology, Bangalore, Karnataka, India

ABSTRACT

Attendance is one of the important parameters to check the regularity of an employee or a student. Normally in institutes attendance is marked by calling their names or registration numbers and marking the attendance in the registers. But this method of attendance requires lots of paperwork and is time-consuming. To make this simpler various educational organizations, are using personal identification methods like RFID, Bluetooth, biometrics, etc. Out of all these strategies, the face recognition method is one of the most efficient methods. It has many applications in attendance systems as well as in security systems. In the present Covid situation, thermal screening is a necessary process to be done in all the companies and educational organizations. In this method the is attendance is marked using the face recognition of a student or an employee and temperature screening is also added to the attendance marking system. In this proposed system the camera takes the snaps of the person who is entering the compares the image with the dataset and if it matches the attendance will be directly stored in any storage device with the temperature of the respective person's name and ID number. In this way, attendance can be marked automatically and at the same time system can scan individual students or an employee to identify potential patients of Covid-19 and decrease save the time used in marking attendance and thermal screening.

Keywords*: Face Detection, Thermal screening, attendance, Database.*

1. INTRODUCTION

Attendance is one of the important parameters to check the regularity and efficiency of an employee or a student. This shows the student's commitment and dedication to his work. Almost all the companies and educational institutions pose strict rules based on attendance. The conventional method that is used in colleges and schools or any institutes to mark attendance is by individually calling each student's name and marking his/her presence which is a very used way. The problem with this method is it takes time to call every name. A n o t h e r issue e m is authentication, where the proxy is also possible and human errors may also occur. Alternate method various companies, as well as educational organizations, are using personal identification approach like RFID, fingerprint, etc. Even though we have different choices mentioned above, new requirements are still arising. Along with attendance tracking or marking, an outbreak of Covid-19 imposed another concern of temperature screening on these systems. The companies and educational institutions made it compulsory to scan everyone before entering the organization. Hence, smart attendance marking system needs to be implemented in place of traditional attendance marking. We propose an idea where attendance is marked using the face recognition of a student or an employee and temperature screening is also added to the attendance marking system. In this proposed system the camera module takes the snaps of the person who is entering the then compares the image with the dataset and if it matches the attendance will be directly stored in any storage device with the temperature of the respective person's name and ID. In this way, attendance can be marked automatically and at the same time system can scan individual students or an employee to identify potential patients of Covid-19 and decrease save the time used in marking attendance and thermal screening.

2. LITERATURE SURVEY

1. This system has selected the Raspberry pi 3 for the detection and recognition of faces. The Pi module is attached with a Pi camera. Face identities make a separation of faces from non-faces and folks' countenances that will be perceived. At this time, we will implement the attendance using face recognition where the face of every student is recognized during the category. The system gives the features like face detection, features extraction, extracted features detection, and student attendance analysis. The accuracy increases in detecting and recognizing faces with the use of a larger number of face features. This paper explains about implementation, design, and conclusion of the system.

2. This system is intended to use ultrasonic sensors, an IR temperature sensor, and a camera that is interfaced with Arduino. The attendance is marked automatically in this way and a parallel system can scan students individually to spot temperature increases. This paper's main objective was to make an attendance marking system using biometric-based temperature screening for institutes.

3. This method wants extensive use of mobile devices and applications to be installed on their smartphone. Majorly in colleges, a rule is followed that doesn't allow mobile phones to carry. By using RFID based system here, anyone can steal the RFID card and make use of it un-propositionally which arises verification problems in both Bluetooth-based and RFID-based systems. The following choice is identity verification with fingerprint scanning. Either students will come to the place where the device is mounted and supply their information or the fingerprint reader is passed to every student. The main objective of this paper is to develop contactless temperature sensing is not attained in this paper. To overcome the above-mentioned problems, we need to propose an attendance marking system that applies face recognition for authenticity and a contactless temperature sensor to examine the temperature of students' thermal sensors are added.

4. In this approach, the proposed model uses the fundamental concepts of web applications and the app development field which can be deployed to attain the proposed model. It'll help institutes not to waste much time on the attendance of the students. This method also makes sure in terms of proxy attendance as this makes use of the assistance of the Bluetooth mac identification. the attendance of the students. When the admin activates the system for the actual hour of lecture, the Bluetooth module tracks the mac identity of the student's smartphone and identifies the precise student supported on the previously on the pretrained database. The student also will be ready to get their attendance details together with many other educational benefits related to the particular lecture.

5. In this paper, the model proposed plans for an automatic system tailored for maintaining and tracking the data of student attendance. The plan includes mainly three components that interact to give us a good experience for users. The key is to make the system cost-effective and straightforward. Combining them with a mobile phone and a web service enables versatile attendance tracking. Periodic detection of the nearby beacons with verification server-side logic makes the proposed design unique in terms of taking common attendance tracking problems. Also, the planning is open for future integration of data analysis modules.

6. In this paper, the methodology has been followed to measure the standards of service for the real-time attendance system. The experiment was done to match the performance of an attendance server which is able to be cost-effective but reliable. To reduce the prices, users are connected to the biometric attendance device with a nearby server where the information is updated instantly. As a result, the possibility of data loss is almost zero.

7. The aim of this project is to use the IoT with an intelligent event-driven system so as to plot a good quasi-real-time attendance tracker. The idea is to stay the whole system within standby mode aside from the low power motion sensor. On the detection of an occasion, when an individual enters and originates a motion, the front-end embedded processor is alarmed. After preceding this, the remaining system modules like PI cam, communication block, etc are activated.

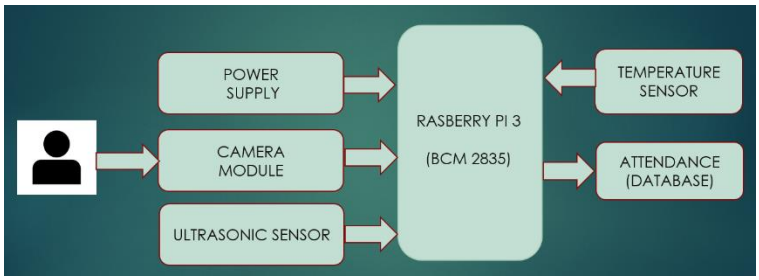
8. This design divides into the face recognition system of check on work attendance information input, attendance sign-in, and attendance record three-function module introduces a principle of face detection and classification, analyses the method of the development of the face recognition classifier, the last on the Android platform design and implements a face recognition system of examine on work attendance, by noting the similarity or dissimilarity between the experiment results of face recognition correctness, verify the feasibility of this plan.

9. This system keeps the data of every student registered in the attendance log and provides the necessary information needed accordingly. By recognizing the face of the student and verifying by RFID simultaneously in our project, the limitations in the existing manual attendance type system are mostly eliminated. Another added feature to the project is that we can save energy by implementing a system using IR modules where the room's electronics turn on only when there are people inside.

10. This paper designs an attendance system based on RFID and face recognition methods. By utilizing a composite validation method with high recognition, the reliability of attendance management and the accuracy of attendance. In this system, the attendance information of employees in companies and institutions can be managed easily. Moreover, the statistical efficiency of attendance data can be effectively promoted, thus satisfying the daily attendance needs of enterprises and institutions.

3. METHODOLOGY

In this project, we will develop a model which will be comprised of a Raspberry Pi module, a camera module, and a contactless temperature sensor. We will also use some cloud-based services for attendance. This system will continuously capture images from the camera module on detection with an ultrasonic sensor which will be interfaced with Raspberry Pi. If any face detection is noticed in the image, it will recognize the face, or if no face detection it simply discards the image. If the face is recognized with the database that is present i.e., the trained model. It will check the temperature. If the temperature is within the threshold, he is updated to the cloud, or else a notification through GSM to the Administrator. If the face is not recognized, he is not allowed.



4. CONCLUSION

In this system, we have implemented an attendance system for a lecture by which teachers can record students' attendance. It spares time and exertion. This attendance system shows the use of facial recognition and detection methods for student attendance management. The result of the test appears in the discovery and Acknowledgment portion. This strategy can moreover distinguish numerous faces and can be effortlessly utilized in a classroom. At that point, the identified faces are at that point confirmed with confront database. In the Covid19 situation, body temperature sensing is important in terms of student safety, so temperature sensing is also done.

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