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Exertion to Hook Computation of Commuters

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ABSTRACT: An Indian railway is one of the largest rail networks in the world where the most of the passengers prefers travelling by train. It would not be wrong to say that each one of us has one time or more found as a victim of theft or any other incidents in the journey. The situation gets more frustrating when we realize that there is no efficient system in place to stop such incidents. There are cases where the intruders get easily into reserve compartments where we all suffer due to the lack of security. Our effort is just to put a stop to such incidents and provide efficient and reliable service which provides safety of person and the properties while travelling. The safety of passengers is must. Even though many people travel by train it is believed to be one of most unsafe place. The passengers may come across many poor situations. In order to avoid these scenarios and improve the conditions present we have put forth an app which highly benefits providing security to the passengers and making their journey smooth. The work will be simplified since the person entering without the ticket can be easily tracked by the admin hence helping in reducing their work.

KEYWORDS: IR Sensors, Camera, Buzzer, QR code scanner, Real time ticket authentication.

I. INTRODUCTION

In India most of the people travel through trains from one state to another which is comfortable and inexpensive compared to other means of transportation. As we know railway station, it is really a crowded place to be at. There is a common goal of getting a group of people and their belongings from one part to another. Fortunately, in reality, a railway station is organized into many different units, from the people you see checking tickets to make sure everyone gets in the right platform, to the computers in the back that no one ever sees, to make sure everything gets on the right train. All these different units have to work together to complete every procedure every single day, to ensure that everything gets to the right place at the right time. Usually the counting process is done manually by the officers. If this process is done for a long period of time, it will be prone to human errors.

To overcome this problem, we have developed an application in order to get a count of people travelling in the train and to avoid intruders entering. As soon as the passengers gets inside the train, the infrared sensor detects and increases the count of number of people entered and vice versa in case of getting out of the train. The passengers will be provided with QR code at the time they book the ticket which needs to be scanned at the door. If any passenger enters without scanning or if the QR code mismatches then the buzzer will be invoked and beep sound will be heard for the entire compartment. Once the buzzer is invoked for 2 seconds, if that person does not exit from the compartment the image will be captured by the camera present and will be held for 5 seconds, even after that if the passenger does not exit the image will be transmitted to TC (The camera will be placed on the top of each doors inside the compartment). Those who enters the train in order to sell tea or any eatable items will also be provided with a QR code and will be scanned but they will not be counted. If any extra passenger gets inside the train can be viewed by the admin of the train hence ensuring the smooth journey. If by any chance the passenger gets down at any station for getting any requirement or for any other purpose and gets in back then he/she will be not recounted again. Only the newly entering passengers will be scanned and counted.

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II. RELATED WORK

1. Indian Railway is world’s largest human transport system, is currently dealing with a lot of problems, such as availability of confirming seat if available during immediate cancellation / getting down at destination. This paper proposes the advantage of QR code image that contains information about ticket and passenger information.
2. The infra-red detectors can be divided into two main categories, namely sensors of the active type consisting of the transmitters and a receiver, they create a punctual ray and operates as on/off detection. Sensors of the passive type, which divide the sole infra-red ray into bundles, thus creating an area of volumetric detection. The infra-red emitter is generally set parallel to one another so that the LED interruption occurs in the direction of crossing and the entry direction can thus be discriminated from the exit one.
3. The accuracy of the proposed method was increased by using images taken from the camera. Camera will be placed inside the compartment and the admin has the privilege to access the image of the passenger.

III. IMPLEMENTATION

We have designed this project to provide security for the passengers who travel through train. So, that the passengers can travel without any worries of the intruders where only authorized people can travel and reach their destination safely. This also helps in reducing the work of the TC manually and gives the accurate information regarding the authorised passengers and intruders.

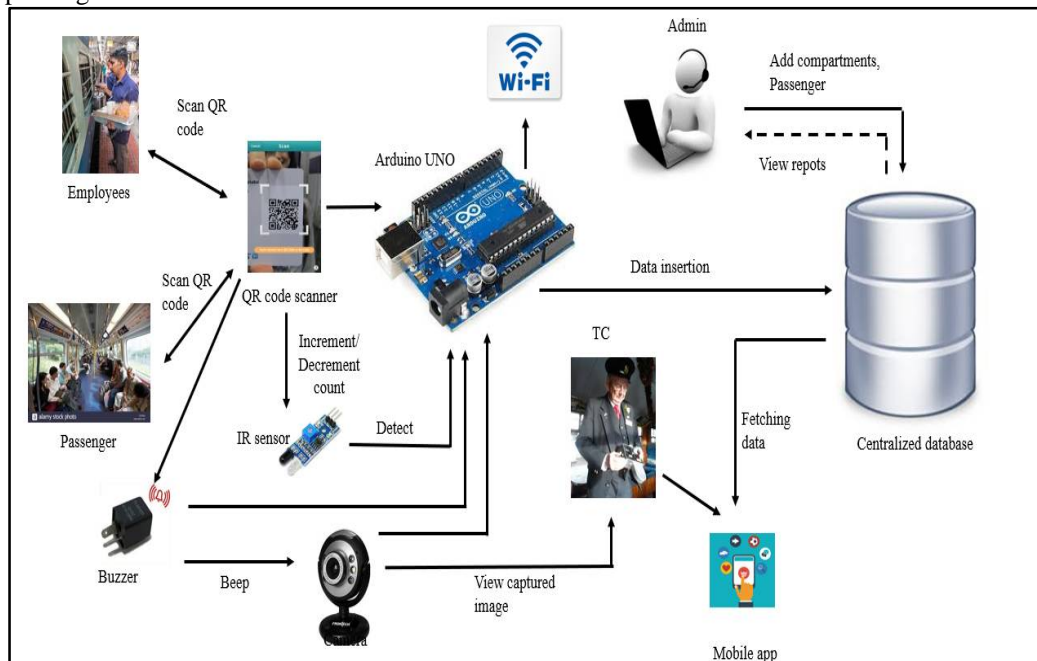


Fig 1: System Design

Here admin has the privilege to view the entry and exit of passengers and also, he will be notified if the extra passengers gets in. Admin has to login initially, if the login is successful then he can choose his admin tasks like adding compartment, creating users and then adding the passengers. Here the compartment details, passenger details can be viewed by both admin and TC, these details will be stored in the centralised data base. Once the admin creates the users, they can book the ticket and get all the details regarding their booking. As the passenger enters the train he/she has to scan the QR code which will be generated at the time of their ticket booking, here QR code scanner will be placed near the entrance of each doors. Once the passenger scans the QR code

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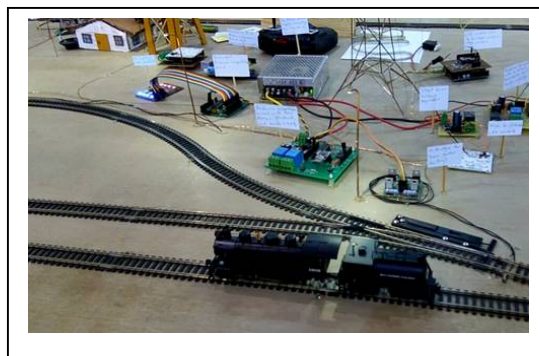
the attendance will be updated. When the passenger boards the train he/she will be recognized by the Infrared sensors present in the train compartment. Here two sensors will be placed near the door where, if the passenger enters the train the first sensor detects the person and the count will be incremented. In case if the passenger does not scan the QR code and enter the compartment or if the QR code mismatches, the buzzer placed inside the compartment will be invoked and the beep sound will be heard which gives an alert to that particular person to exit from the compartment. Even then if that person does not exit, the image will be captured by the camera which is placed on the top of the doors in the compartment, after seven seconds the captured image will be transmitted to TC as notification alert. If the second sensor detects the person then the count will be decremented which means the person has been exit from the compartment. TC has to login to view the attendance and the captured images. He can retrieve these information from the centralised data base.

IV. EXPERIMENTAL RESULTS

Figures shows the results of how exactly the passengers enters the compartment by scanning the QR code and how the TC will get notified if the intruders enter the compartment



(a)



(b)

Fig 2: (a) Embedded system is placed inside the train compartment (b) model of the project

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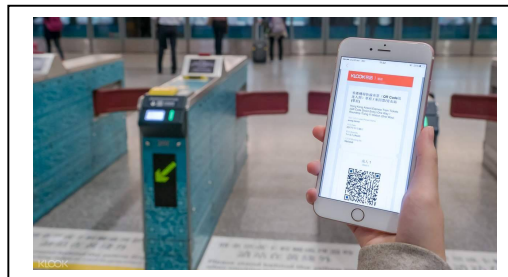
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In Figure 2 the fig (a) shows where the embedded system is placed inside the train compartment which can be implemented in the real time application in future and fig (b) shows the model of our project where all the components are interconnected to the railway compartment using Arduino UNO micro controller.

In Figure 3 the Fig a,b shows sample of QR code on a ticket. QR code (Quick response code) consisting of an array of black and white squares, typically used for storing URLs or other information for reading by the camera on a smart phone. Once scanned, software on the device converts the dots within the code into numbers or a string of a characters. This can be used by the passengers at the time of entering the train compartment and shows where the passengers are ready to get into the train compartment.



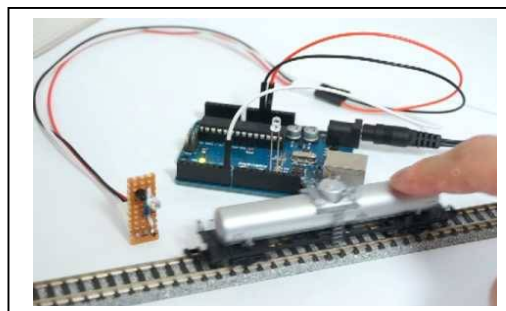
(a)



(b)

Fig 3: (a)QR Code scanner, Scenario of passenger scanning their ticket to QR CODE scanner(b) Generated QR code for passengers at the time of booking.

Figure 4 the fig (a) shows the infrared sensor connected to the arduino UNO which detects the entry and exit of the passengers in the train compartment. These sensors keeps the count of the passengers present in the compartment where the count increments when the passenger enters and decrements when exits.



(a)

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Fig(b) shows the buzzer, which is an audio signalling device which may be mechanical, electromechanical or piezoelectric. It helps in alerting the intruders to exit from the compartment by the beep sound. Fig (c) shows the camera which is placed inside the compartment on the top of each doors, it captures the images of the intruders who enters without scanning the QR code.



(b)



(c)

Fig 4:(a)IR sensor connected to Arduino UNO(b)Buzzer gives the alert beep sound for the intruders(c)Camera which is placed inside the compartment.

IV. CONCLUSION

The railway station is a place where train regularly stops to load or unload the passengers or freight which is heavily crowded. There are many cases in our city where different kinds of malfunction take place day to day which makes the journey more horrifying and riskier. In order to avoid these there must be some kind of security to the individuals, hence we have developed an app which helps in getting the count of people in case of any doubtful information by ensuring more security.

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