

# RAILWAY CHAIN ACCESSOR DETECTING SYSTEM BASED ON FINGERPRINT MODULE

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**Abstract :** The current problem in railways is detection of railway chain accessed person. According to statics there is huge loss in the railway due to these problems. A smart way of reducing these problems will be implemented in this project. The travelling passenger, in-case of situation to stop the train has to place his biometric on the scanner in-order to access the chain which is enclosed by sliding doors and fine will be generated to the persons respected biometric linked mobile number. This project helps in solving the emergency condition without fine. Hence the revenue loss can be controlled using this project

## I. INTRODUCTION

Illegal chain-pulling is a serious problem in Indian railways. According to statics there is huge loss in the railways due to this problem. A smart way of reducing these problems will be implemented in this project. The project we developed is embedded system with the GSM module and fingerprint module in order to fine the people who leads to these activities. In order to access the chain, the accessor thumb impression is must to slide the door and the thumb impression will be stored in database. The fine will be generated and the person will receives a message. It is also used to help the emergency cases by placing an buzzer whenever the passenger presses the buzzer it sends an information to authority, then the authority checks the situation and unlocks the chain using his fingerprint and no fine will be generated to him as he is an respected railway authority. Hence the revenue loss can be controlled using this project.

## LITERATURE SURVEY

- Railways and roadways are the two means of transport over the land. Roads can be built in the hilly areas also whereas railway lines cannot be laid easily. The railways have advantage over the roadways that they can carry a large number of passengers and large and heavy loads to long distances.
- Chain-pulling is the act of pulling a cord that activates the train's emergency brakes to stop a train, whether for a genuine emergency or (often) illegally for someone to get on or off the train on the Indian railway network.
- Passenger coaches are fitted with an alarm chain pull arrangement to enable passengers to stop the train by pulling the alarm chain from within the coach in case of any emergency.

## GENERAL ACCEPTABLE REASONS COULD BE:

1. Family member/s was left at the station (while trying to board or deboard the train) during the departure of the said train.
2. De Boarding/Boarding at station with older person/differently abled person where the train have a stoppage time less than the required.
3. In case of emergencies (there could be a variety of them) that would be evaluate by the competent authorities with the available option and circumstances.
4. Emergencies include medical emergencies.

## TYPE OF FINES AND AMOUNT OF FINE

**a) Travelling without proper ticket** (sec.138 Railway Act)

**Punishment:** Ordinary single fare for the distance which he has travelled or from the station from which the train started and the excess charge i.e. `250/-

**b) Travelling fraudulently** (sec.137 Railway Act)

**Punishment:** 6 months jail, fine 1000 or both

**c) Alarm chain pulling** (sec. 141 Railway Act)

**Punishment:** 12 months jail, fine 1000 or both

## UPDATED SCENARIO BY INDIAN RAILWAYS

At Izzatnagar in bareilly, the work of removing chains from trains has already begun. Officials says as an alternative arrangement mobile phone number of the driver and assistant driver could be displayed in coaches, so passenger can call in case of emergency. In addition to displaying the mobile number of driver and assistant driver, one employee carrying a walkie-talkie would be present for every three coaches in each train.

**SOLUTION THAT WE HAVE DEVELOPED:**

The project we developed is embedded system with the gsm module and fingerprint module in order to fine the people who leads to these activities. In order to access the chain the accessor thumb impression is must to slide the door and the thumb impression will be stored in database. The fine will be generated and the person will receives a message. It is also used to help the emergency cases by placing an buzzer whenever the passenger presses the buzzer it sends an information to authority, then the authority checks the situation and unlocks the chain using his fingerprint and no fine will be generated to him as he is an respected railway authority.

The efficiency obtained from this model is high compared to the existing model currently we had. Using this module there is no escape of people who pulls the chain.

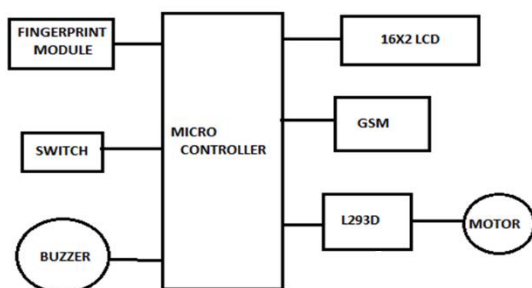
**MAIN ALGORITHM:**

1. Initially the chain is protected by glass, it will be slid when any passenger wants to access the chain by placing his biometric on fingerprint module.
2. The passengers are provided with a emergency switch in case of emergency to call the authority.
3. The authority getting a help requirement from the passenger the authority will check the situation
4. The authority check the condition is it true or not ?
5. If the emergency help required is true, the authority can access the railway chain by placing his biometric on fingerprint module, thereby accessing the chain.
6. The authority will not be fined for accessing the chain because he is an respected railway employee.
7. The railways passenger can also access the railway chain by using his/her biometric on fingerprint module.
8. The passenger after accessing the chain will get a message from railways that he has to pay a fine for accessing the railway chain.
9. The passenger can pay the fine at the railway counter by showing his/her adhar card.
10. In this way the revenue loss to the railways can be recovered from the above project.

**HARDWARE COMPONENTS :**

- MICROCONTROLLER
- FINGER PRINT MODULE
- GSM
- SWITCH
- L293D
- BUZZER
- 16X2 LCD

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**BLOCK DIAGRAM :**

**GSM SERVICES:** Speech or voice calls are obviously the primary function for the GSM cellular system. To achieve this the speech is digitally encoded and later decoded using a vocoder.

**DC MOTOR:** DC Motor – 10RPM – 12Volts geared motors are generally a simple DC motor with a gearbox attached to it.

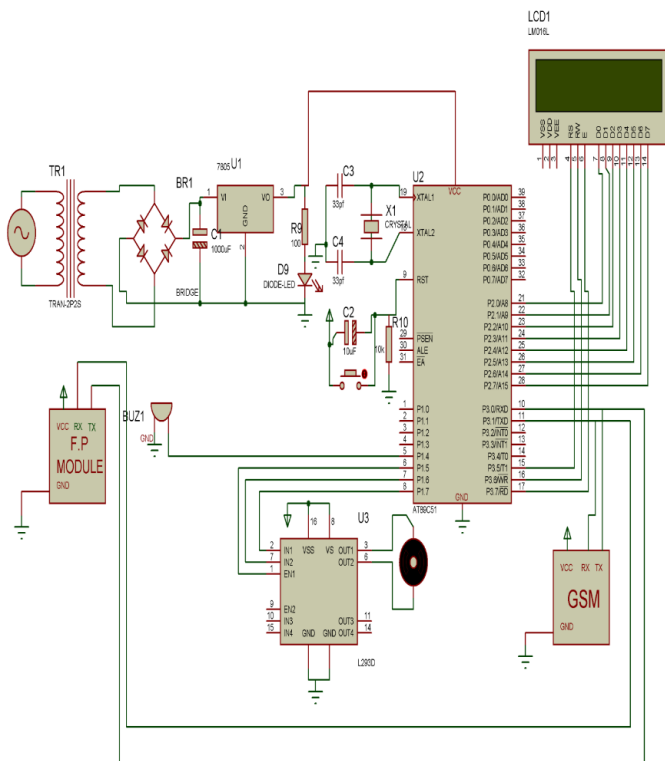
**MICRO CONTROLLER:** The microcontroller incorporates all the features that are found in microprocessor.

**FINGER PRINT SENSOR:** The fingerprint sensor is combination of R305 FP+PIC MCU board that can read different fingerprints and store in its own flash memory.

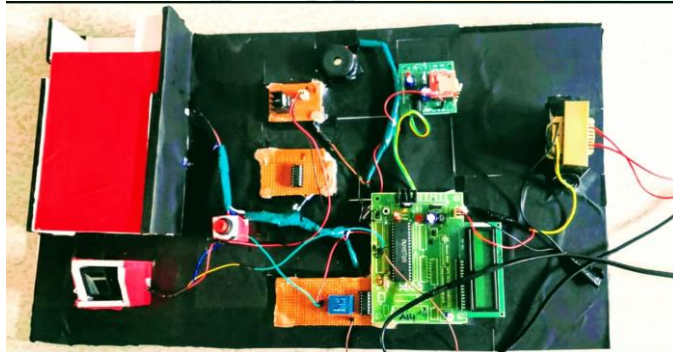
**BUZZER:** The PS series are high-performance buzzers that employ Uni morph piezoelectric elements and are designed for easy incorporation into various circuits.

**LCD:** Alpha numeric displays are used in in this system.

**CIRCUIT DIAGRAM:**



**WORKING OF THIS PROJECT:**

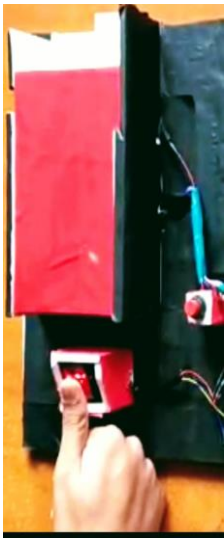


This project was developed in the objective view to reduce the revenue loss to the railways by solving the two conditions:

- **Fining the illegal chain accessor**
- **To solve the emergency condition without fine**

The above two specified conditions mentioned are explained below

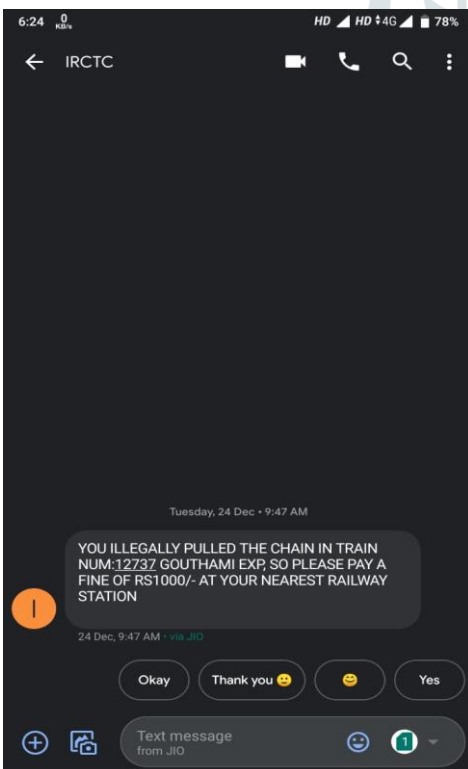
**CASE 1: FINING ILLEGAL CHAIN ACCESSOR:**



If any person wants to stop the train instantly, they must place their biometric on fingerprint sensor to access the chain then the slide will open.



Here chain is replaced with green colour push button.



Message from IRCTC to the person, who illegally accessed the chain.



**CASE 2: TO SOLVE THE EMERGENCY CONDITION WITHOUT FINE:**

In-case of emergency condition the passenger travelling in the train can press the buzzer provided in-order to provide an indication to the authority.

Now, the assigned officer will come and check whether

the reason is genuine or not. If the reason is acceptable, railway official will place his finger on the scanner instead of passenger. The official should stop the train at the station where there is provision for medical help. As he is an respected railway authority and stopped the train for genuine reason, there will be no fine.

**CONCLUSION:** With these project it helps the railways in having the following benefits

- Indiscriminate action committing people can be fined
- Emergency conditions can be solved without fining them
- Revenue loss to the government can be reduced

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