**ADVANCE SECURITY AND AUTOMATION IN METRO TRAINS**

**AIM:**

The aim of the project is to avoid the congestion of people and also to prevent the passengers from fire accidents.

**PURPOSE:**

The purpose of the project is to know the number of persons entering and exiting the train and to detect fire using fire sensor and buzzer and SMS alert on detection of fire.

**BLOCK DIAGRAM:**

**MICRO CONTROLLER**

**(8051)**

**POWER**

**SUPPLY**

**LCD DISPLAY**

**MOTOR**

**(DOOR)**

**IR   
(STATION ENTRY)**

**MOTOR**

**(ENGINE)**

**IR   
(STATION EXIT)**

**GSM MODULE**

**IR   
(PERSONS ENTRY)**

**FIRE SENSOR**

**IR   
(PERSONS EXIT)**

**BUZZER**

**DESCRIPTION:**

As metro trains will be closed so there may be problem of oxygen deficiency due to congestion and if any fire accidents occur then also escaping chances and alerting the people will be a difficult task. Hence to avoid these two problems our project prototype proposes an automation system which detects the count of the persons entering in to the each compartment and also detects the fire accidents.

This project consists of two parts: one is the detection of number of persons entering and exiting the train and the second part is detecting fire using a fire sensor and on detection of fire sending an SMS alert and ringing of the buzzer.

Here two IR pairs are placed in station to detect the entrance and exit of train in stations. After the train reached to the station the engine will stops and door will be opens automatically. Another IR pairs are placed inside of the train compartment which is used to count the number of persons entering and exiting the train and the count will be displayed on the LCD monitor. The maximum limit for the number of persons to enter a compartment is 10. If this number exceeds then the doors will be closed automatically. Next part of this project is the fire detection. The fire sensor will detect the fire and the passengers in train will be alerted by buzzer and nearby station also intimated requesting for safety actions with a SMS alert sent through GSM.

**HARDWARE COMPONENTS:**

* Microcontroller(8051)
* IR sensors
* Fire sensor
* GSM
* Buzzer
* LCD

**SOFTWARE REQUIRED:**

* Embedded C
* Kiel IDE
* ISP

**RESULT:**

By this prototype we can implement a safety system which avoids the deficiency of oxygen due to congestion control and also passengers will be saved from fire accidents.