

# REAL TIME TRACKING BASED ON GSM AND IR MODULE FOR RUNNING TRAIN

D. V. Rojatkar<sup>1</sup>, Roshan Wadibhasme<sup>2</sup>, Pranay Mankar<sup>3</sup>, Viki Vaidya<sup>4</sup>, Mayur Turkar<sup>5</sup>

<sup>1</sup>Doctorate Electronics and Telecommunication Engineering, Government College of Engineering Chandrapur, Maharashtra, India

<sup>2</sup>UG Student, Electronics and Telecommunication Engineering, Government College of Engineering Chandrapur, Maharashtra, India

<sup>3</sup>UG Student, Electronics and Telecommunication Engineering, Government College of Engineering Chandrapur, Maharashtra, India

<sup>4</sup>UG Student, Electronics and Telecommunication Engineering, Government College of Engineering Chandrapur, Maharashtra, India

<sup>5</sup>UG Student, Electronics and Telecommunication Engineering, Government College of Engineering Chandrapur, Maharashtra, India

## Abstract

The new technological concept and innovation and digital communication system should be used in point to point transporting system. Such as railway transport provide hi-tech service to the passenger Today In this present era most of the people travel by the train as it is comfortable for them ,but sometime what happen if the train is let foe some specific hours by some technical reasons then the passengers feel uncomfortable and they feel inconvenience. So to overcome to this issue we have designed such train which gives its own status to the passenger via GSM and TSOP IR module. So in this paper we have described how it can be possible to do so. The passenger without any manual affords or without using any internet link and railway inquiry system will get SMS by the train itself sending self running status about itself. The objective of project is to design Railway information through SMS. The operation of this circuit (project) is based on the prototypical operation. The basic principle based on the operation of photo sensors. The one of the most advantage is it provides auto information by using sensor .The circuit is to simple then other complex circuits used for grade crossing in these circuit operations is automatic. The circuit works in both direction and can be connected to other circuits to fully to provide the time and distance of train . The circuit is designed in such a way that it can be easily installed and it uses widely available and inexpensive components.

**Keywords:** GSM Module, TSOP, IR Sensor, Monostable Multivibrator and GPRS

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## 1. INTRODUCTION

Railway transporting means providing passenger and goods via wheeled vehicle running on rail tracks. As compared to road transport vehicles mainly run on prepared surface where as railways are guided by the track they run. Mainly Railway track are guided by automated by signal system. Railways are safer than any other transport system, but it has some inheritance. For example passenger time is wasted for the arrival of train if the train is let and the passenger get irritated. So the passenger time is wasted as well as he feels inconvenient.

So now we are describing the existing system and the system which we are recommending over existing system in this paper.

In this paper we mainly focused on SMS send to passenger via GSM and TSOP module. The aim of this paper is to reduce the time of passengers. The GSM module it is a hardware component that allow to capability of send or receive SMS to and from the main system. The communication to GSM module with the help of RS232

serial port. The mobile phone connects to GSM module and functionally sends or receives SMS. We have used TSOP IR sensor, this sensors is combination of pre-amplifier and pin diode demonstrated IR filter to catch 38 KHz frequency.

The TSOP IR sensor catches the IR ray and gives the signal to the main system. The main system sends the SMS to registered people in railway link who had reservation.

### 1.1 Existing System

- People have to wait for train.
- The location of train is enquired manually with railway enquiry system.
- Current time of location of arrival of train can't be known.
- People have to contact enquiry counter to know the status of specific train of its arrival.

### 1.2 Recommended System

- People don't to wait for long time.
- Automatic information by the train to the passenger.

- Train arrival status and location status is itself given by the train.
- The status is given by the SMS the specific person who has the reservation.
- People don't have to enquiry about train manually.

## 2. BLOCK DIAGRAM OF SYSTEM

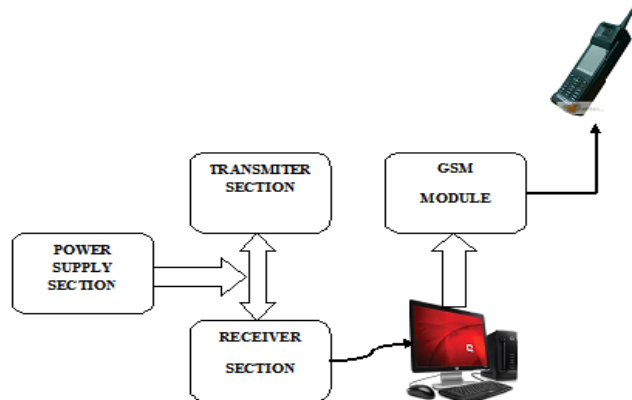


Fig -1: Block Diagram of Recommended System

## 3. HARDWARE SPECIFICATION

The following hardware components are used in building the entire system.

### 3.1 GSM Module

It is a hardware component that allows sending and receiving SMS to form this system. The communication system takes place via RS232 serial port.

### 3.2 TSOP IR: TSOP1738

Is receiver for remote control system..Pin diode and preamplifier are assembled on lead frame, the epoxy package is designed as IR filter.

### 3.3 IC 555

The IC 555 is monolithic timing circuit is a highly stable controller capable of producing accurate time delay or oscillation.

## 4. WORKING PRINCIPLE

### 4.1 IR Transmitter

In transmitter section, the monostable multivibrator IC 555 based are use for triggering the circuit.. The IC 555 transmitter operate IR sensor and IR sensor transmitter transmit the IR rays. IC 555 is a free running oscillator and the frequency can be adjusted by using variable resistor. The free running oscillator is self generated trigger without any external source and it generates waveform in the form of pulse. In a sine waveform the circuit perform as like as capacitor such as charging or discharging phenomenon between  $1/3$  vcc and  $2/3$  vcc. In trigger mode charging and discharging is independent on supply voltage. In this circuit the frequency is depend on resistor and capacitor but we

cannot vary the value of capacitor because value of capacitor is constant, so we used variable resistor and with the help of variable resistor and adjust the frequency of 38 KHz to obtained stable square wave and further it is transmitted via IR LED.

### 4.2 IR Receiver

In receiver section we have connected the TSOP module. When the IR signal is not detected by TSOP 1738 then the output of pin 3 of IC 555 goes high. There is resistor connected for limiting the current at the output of TSOP. When the capacitor discharges then the lower comparator of IC 555 is less than  $1/3$  VCC voltage then the SR flip flop is reset and the transistor which is connected across SR Flip flop will be off ( $VCC=VCE$ ) then the output of the SR Flip flop is high and this output is fed to the parallel port of the computer. Then TSOP IR module receives 38 KHz frequency signal which is transmitted by the IR transmitter.

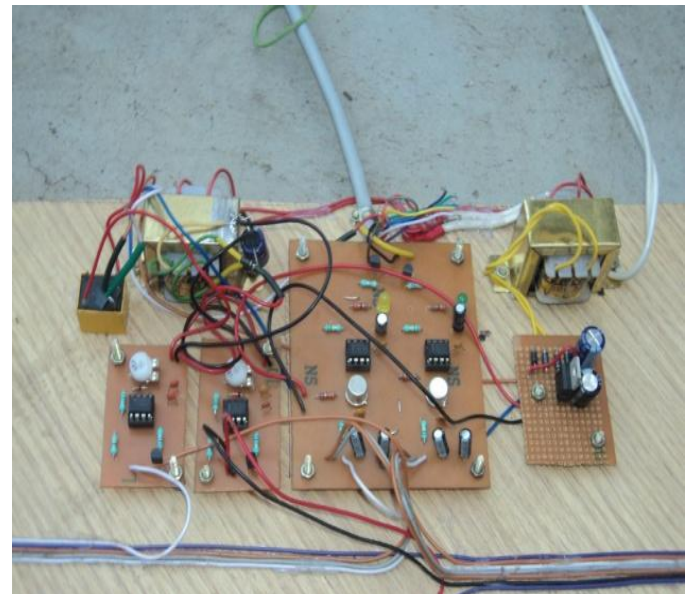


Fig -2: Transmitter and Receiver Module

## 5. SYSTEM FLOWCHART

In this system using Visual Basic Studio we have implemented a stepwise procedure to send a message from a system to the passenger via GSM Module.

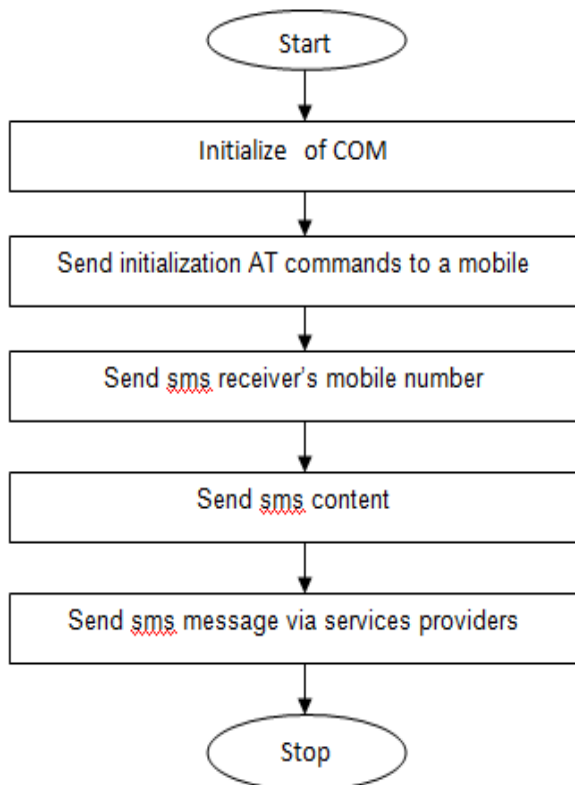


Fig -3: System Flowchart

For sending SMS to the passenger we have made use of visual studio. At first initialization of the PC. Send AT command to the mobile. AT command is the advanced technology command which is to control the mobile phone or GSM module. Then is to send SMS to the passengers mobile no. with the SMS content. The SMS is send through service provider and then system is stopped.

## 6. ADVANTAGES

- 1) On hand information to the passenger at any location.
- 2) SMS messaging services is low cost and effective to all passengers.
- 3) The circuit use in this project is low cost and less power consuming with effective transmission

## 7. CONCLUSION

Tracking system is becoming increasingly important in large cities and it is more secured than other systems. It is completely integrated so that once it is implemented in all vehicles, then it is possible to track anytime from anywhere. It has real-time capability, emerges in order to strengthen the relations among people, vehicle and road by putting modern information technologies together and able to forms a real time accurate, effective comprehensive transportation system. This system has many advantages such as large capability, wide areas range, low operation costs, effective, Strong expandability and Easy to use in railway traffic administration. Upgrading this setup is very easy which makes it open to future a requirement which also makes it more efficient.

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## BIOGRAPHIES



**Roshan Naresh Wadibhasme** presently appeared in B.E degree in Electronics and Telecommunication from Government Engineering College , Chandrapur (MH).



**Pranay Bhayyaji Mankar** presently appeared in B.E degree in Electronics and Telecommunication from Government Engineering College , Chandrapur (MH).



**Mayur Satish Turkar** presently appeared in B.E degree in Electronics and Telecommunication from Government Engineering College , Chandrapur (MH)