

SMART PLATFORM

¹TEJAS M. AHER, ²RAMESH S. KERAPPAGOL

^{1,2}Guru Gobind Singh Polytechnic, Nashik 422009.
E-mail: ¹tejas.aher26@gmail.com, ²rkerappagol@gmail.com.

Abstract - This project is used for automatically close or opens the mobile platforms in between the track trains. Normally the mobile platform connects the two platforms through which the passenger can walk on the platform to reach on the next platform. Sensors are placed on the two sides of track. If the train reaches one sensor the mobile platform will automatically close and allows the train to go through the tracks and then when the train leaves the second sensor the mobile platform will automatically open the bridging platforms. The microcontroller will sense the presence of train by using infrared sensor. So on sensing the train on one path controller will give pulses to the stepper motor to close the mobile platform automatically. Now a day we are using over bridges for crossing the rail and manual controlling mechanism for the railway gates. But most of the passengers are not utilizing this facility and they will cross the rail directly and leads to accidents. Also the carelessness of the gate keeper or absence may lead to accidents at the railway crossings. In this project we are introducing a new intelligent platform which reduces accidents and make an easy passage for passengers from one platform to other platform and also an automatic railway gate which is controlled by a computer. The proposed system consists a detection system, microcontroller unit and motor driver system. The main advantages project is, it reduces the accidents at the railway crossing and platforms and provide an easy passage for the passengers.

Keywords - IR-Sensor, Dc Gear Motor, Microcontroller AT89S52

I. INTRODUCTION

The present railway systems in India are not automated which are fully manmade. In railway stations normally we use bridges. It is very difficult for the elderly persons or a handicapped person to use the bridge. This project finds a good solution. Mainly the tracking of a train is sensed by sensor, this is used for automatically close/open the mobile platform. Sensors are placed on two sides of track to sense the motion of train. The microcontroller will sense the presence of trains by using infrared sensors. So on sensing the train on one path, the controller will give pulses to the stepper motor to close the mobile platform automatically.

II. OBJECTIVE

As India is fast growing country we are trying to develop our transportation system to fulfill the need of population and as we know train is one of the best mode of transportation to travel from one place to another, but when time comes to use this mode of transportation people are being irritated due to the crowd and the systems adopted at railway stations to reach on platforms from one to another. And to avoid the time consumption and efforts many of the people choose to reach the platform by crossing the track directly and due to this many of the time accidents occur and many of the people lose their life. Foot Bridge isn't implemented anywhere in the India and abroad too. There are so limitations of foot over bridge as well as escalator. Footbridge will be provided easy way pass way to the passengers to pass one platform to another and directly affected drop off on accidents due to the peoples cross tracks directly.

Aim

The main aim of this project is to design a system to open/close mobile platforms inbetween the train tracks for elder or handicapped people

Existing system

In Railway stations normally we use bridges to go to the other platforms. Later introduced escalators instead of steps. Sometimes it is very difficult for the elderly persons or handicapped persons to use that bridge. Our project finds a solution to this problem.

Problem Definition

This project is used for automatically close/open the mobile platforms inbetween the train tracks. Normally the mobile platform connects the two platforms, through which the passengers can walk on the platform to reach the next platform. When the train comes, Sensors are placed in the two sides of the track. If the train reaches one sensor, the mobile platform will automatically close and allows the train to go through the tracks and then when the train leaves the second sensor the mobile platform will automatically open bridging the two platforms.

Need of Slider Bridge:

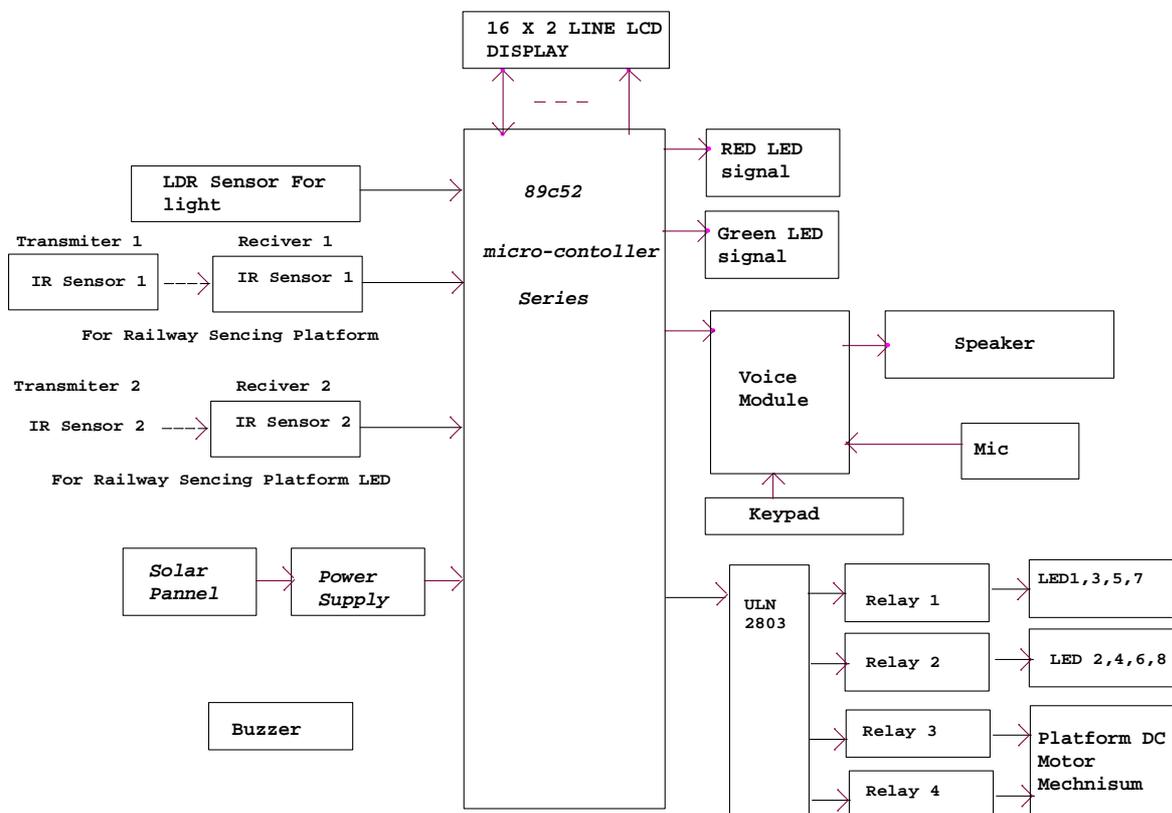
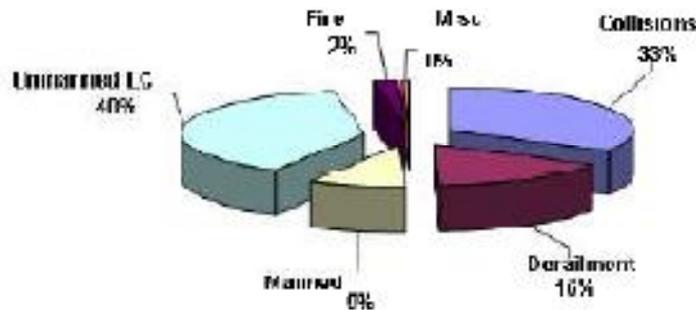
1. **Save the Time of Passengers:** Mainly the specialty of this station is that it is made up of bridge from which passengers & goods can be transferred from one platform to another as most fast as same level.
2. **Reduces the Accident:** Slider foot-bridge reduces the accident.
3. **Good for Safety of People:** Easy for older people to passing from one platform to other platform. The bridge is usually used when the passengers who are aged and cannot able to walk by the steps at that time this bridge is very useful.

4. Transportation: Slider foot-bridge is easily transfer goods from one platform to other platform.
 5. Easy Approach: Easy for coulee people to do work. And secondly the heavy luggage's when there is need to transfer from one platform to another that time as well as bridge is very useful.
 6. Easy Access: Slider foot-bridge is easy accessible for old age and handicapped peoples.
1. Review the present status of level-crossing accidents and train collisions.
 2. Present statistics, indicators, technology and problems relating to the systems adopted for railway protection; in practice
 3. Analyze various alternative systems for train collision avoidance; and
 4. Make recommendations pertaining to the selection of cost-effective protection systems.

Scope: To

III. LITERATURE SURVEY

Railway is lifeline of India and it is being the cheapest modes of transportation are preferred over all other means of transportation. When we go through the daily newspapers we come across many accidents in railroad railings. Railroad-related accidents are more dangerous than other transportation accidents in terms of severity and death rate etc. Therefore more efforts are necessary for improving safety. Collisions with train are generally catastrophic, in that the destructive forces of a train usually no match for anyother type of vehicle. Train collisions form a major catastrophe, as they cause severe damage to life and property. Train collisions occur frequently eluding all the latest technology.



The existing conventional signaling system most of the times relay on the oral communication through telephonic and telegraphic conversations as input for the decision making in track allocation for trains. There is large scope for miscommunication of the information or communication gap due to the higher human interference in the system. This miscommunication may lead to wrong allocation of the track for trains, which ultimately leads to the train collision. The statistics in the developing countries showing that 80% of worst collisions occurred so far is due to either human error or incorrect decision making through miscommunication in signaling and its implementation. IR sensors are also used to identify the cracks in the railway. IR sensors have limitations due to the geographic nature of the tracks.

IV. BLOCK DIAGRAM DESCRIPTION

The Microcontroller will sense the presence of trains by using Infrared sensors. So on sensing the train on one path, the controller will give pulses to the motor to close the mobile platform automatically. The mobile platform has a red/green Signal indication so that the pedestrians can know whether they can use the bridge or not. The signal automatically turns to red when the train comes and becomes green when the train leaves the station.

Railway Platform Control The project comprises three major parts namely,

- a. Detection system
- b. Controlling system
- c. Alerting system

a. Detection System

The main components of the project are two IR sensors which are placed at both sides of the station. One of the IR sensor that detect the arrival of train and the other IR sensor placed at the end side of the station detects the departure of the train.

b. Controlling System

When the train crosses the first IR sensor, which is kept near the rail with a predefined distance from the platform, the microcontroller will send a signal to the motor and hence the platform is get removed or opened. When the train crosses the second IR sensor, microcontroller will send a signal to the motor and hence the platform is get closed.

c. Alerting System

In our project for the alerting purposes we mainly use two components, one is the signal led and the other is buzzer. Two LEDs, Red and Green have been used in our project is to inform the passengers about the status of the train as well as platform. The Red LED glows when the train is about to cross the platform. And the Green LED glows, when the train has

The Anti-collision device system also is found to be ineffective as it is not considering any active inputs from existing Railway signaling system, and also lacks two ways communication capability between the trains and the control centers or stations. Later geographical sensors have also been used which makes use of satellites for communication. But the system is costly and complicated to implement. At present laser proximity detector is used for collision avoidance, IR sensors identifies the cracks in the railway track and gate control is done by manual switch controlled gate. But there is no combined solution for collision between trains, train derailment in curves and bends and the automatic control of railway gate.

crossed the second IR sensor at end side of the station and the passengers are allowed to use the platform. The buzzer is used in our project to signal the crossers-by about the status of the train. The buzzer will activate, when the train is approaching the station. We have used voice module (speaker and mic) for announcement of status of bridges it is helpful for the peoples with disabilities.

Block diagram consists of following components,

1. **Microcontroller AT89S52:** Microcontroller AT89S52 IC is the heart of the system. It controls all the functions.
2. **ULN2803:** It is used for current boosting as controller IC produces 1A only, but relay requires 200A of current hence to on and off relay we used ULN2803 IC.
3. **Power Supply:** 5V power supply is required in our system it supplies voltage to microcontroller IC.
4. **Solar panel:** solar panel stores energy and supplies to power supply, by using solar panel we can save a lot of electricity and cost.
5. **Buzzer:** Buzzers used to indicate that train has arrived hence don't cross the bridge.
6. **LCD Display:** here we used 16*2 LCD Display, on LCD Display the status of train is shown.
7. **IR Sensor:** IR Sensor is used to sense the presence of train. IR Sensors are implemented to both sides i.e. at transmitter side and railway sensing platform.
8. **Relay:** SPDT relay is use in our project it is use to switch on/off the circuit.
9. **LDR Sensor:** it is a light dependent resistor it is connected to controller IC.
10. **LED:** LED's (red and green) indicates either to cross the platform or not. If red LED glows then people have notified to stop don't cross the platform as train is going to arrive. And when green LED is on peoples get notified that train has gone and they can able to cross the platform.
11. **Voice module:** Voice module is very helpful for the peoples with disabilities, they can get notified

by hearing the information about the status of bridge and either the train is arrived or passed.

- 12. DC Motor:** DC motor is used to slide the platform, when train arrives a platform is closed and when train goes the bridge will connects to platforms using motor.

ADVANTAGES

1. It saves the time for passengers to cross the next platform.
2. Helps the passengers to cross easily without using stairs.
3. Handicapped and those with wheel chairs can rely on this.

DISADVANTAGES

1. Detecting whether there is any passenger on the mobile track even after alarm is not possible, which may lead to accidents.

2. In case of power failure, the project will not function.

CONCLUSION

Hence, by implementing this project it is easy for tracks for elder or handicapped people to cross the railway track without using staircase.

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