

AUTOMATIC RAILWAY GATE CONTROL SYSTEM WITH HIGH SPEED ALERT SYSTEM

Mr.T.Kirabhakaran*,D.Arunlingam*,T.C.Bharathkumar*,S.Ragupathy*,N.Vallarasu

#Assistant Professor,*Student

#* Adithya Institute of Technolog

Coimbatore,india.

Abstract-The objective of this is project to provide an efficient alternative to many conventional techniques,In addition we have also implement the IOT module to sensor information to the railway authorities and train driver ,By using this project we can prevent more accidentCurrently when train arrives at the gate the gate closes automatically Once the train passes the gate the gate will open automatically

Our upgrade this projective can calculate the speed of train and screen Train speed at the gate,The objective of this research work is to provide an efficient alternative to many conventional techniques used by the railways in order to

decrease accidents occurrence incorporating manual operations i.e. aims at the design, development and testing of working model entitled Automatic Railway Gate Control system with intruder sensation and high speed alerting system. Railway track and road related accidents are more dangerous than other transportation accidents in terms of severity and death rate etc. This model deals with two things. Firstly it deals with the reduction of time for which the gate is being kept closed and secondly, to provide safety to the road users by reducing the accidents.

Keywords – Automatic Railway Gate Control System, Signaling Lights, Buzzer, Stepper Motor,Alert System.

I. INTRODUCTION

The aim of this project is to control the unmanned railway gate automatically using the embedded platform. Today we see in newspapers very often about the railway accidents happening at unattended railway gates. Present project is designed to avoid such accidents if implemented in spirit. This project is developed in order to help the railways in making its present daily routine working system a better one, by eliminating some of the loopholes existing in it. Based on the responses and reports obtained as a result of the significant development in the working system of railways,

this project can be further extended to meet the demands according to the situation. This can be further implemented to have control room to regulate the working of the system. Using simple electronics components we have tried to automate the control of railway gates. As a train approaches the railway crossing from either side, the sensors that are placed at a certain distance from the gate detects the approaching train and accordingly controls the operation of the gate. Also indicator

light has been provided to alert the motorists about the approaching train. This device is to manage the control system of railway gate using the microcontroller. In this research work ATMEGA16 Microcontroller plays the main role. The program for this project is embedded in this Micro controller and interfaced to all the peripherals. The timer program inside the Microcontroller IC performs all the functions as per the scheduled time. ATMEL STUDIO is used for the making of code and hex file. In general, level crossing gates are operated manually by a gate keeper. The gate keeper receives the

information about the train arrival from a near station. When the train starts to leave the station, the station in-charge delivers this information to the closest gatekeeper .

II. HARDWARE DESCRIPTION

This picture given below shows the Automatic Railway Gate Control by using ATMEGA16 microcontroller. railway gate control system is to use various electronic components. This system can be simply divided into three main categories: the input, the processing and the output units. The detail circuit diagram of the

railway gate control system is shown in Fig.1. For the gate control state, the gate will be closed when the motor rotates at particular angle (i.e. 90 degree) until the train has crossed the gate otherwise the gate remains opened.

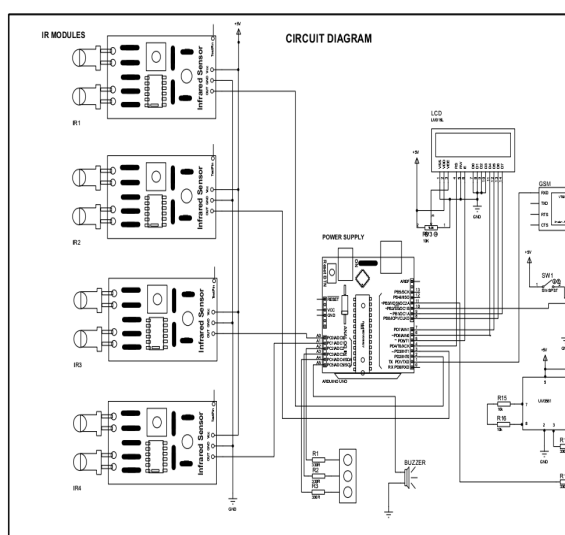


Figure1

Fig.1. Circuit diagram.

The LCD display is used to show the arrival and departure messages of train. Alarm unit is utilized for warning the road users. The gate control system consists of four infrared sensors. The sensors are fixed at the certain distance on both sides of the gate, i.e. sense train before arrival and sense the train departure. When the sensor

1 and sensor 2 senses the train, IR sensors goes in “on” state. At the same time, the light signal of the road traffic is changed from Green color to Red color and the train traffic signal is changed from Red to Green color. A buzzer gets activated when the train is crossing the gate and the railway gate is closed, and train arriving on track message will displayed on LCD display. When the train passes through the IR sensor3 and sensor 4, the road traffic is changed from Red color to Green color and the train traffic is changed from Green to Red color. At the same time, the railway gate gets open.

The timing condition for the railway gate control system must be set base on the speed and length of the train into the background algorithm for microcontroller. Timing condition for the railway gate control system must be set based on the speed and length of the train into the background algorithm for microcontroller.

III. Explaining Different Parts:

The components used are as follows

ATUNO: Totally 40-pin DIP package Manufactures with CMOS Technology.

IR Sensor: Use IR rays transmitter and black led Receiver to detect obstacle.

LED: Use for signaling of road side and train side traffic.

Stepper Motor: This is used to open and close the gates automatically when it is rotated clock wise anticlockwise direction. Stepper motor requires 500mA current so use the ULN2003 or ULN2803 driver to drive the stepper motor.

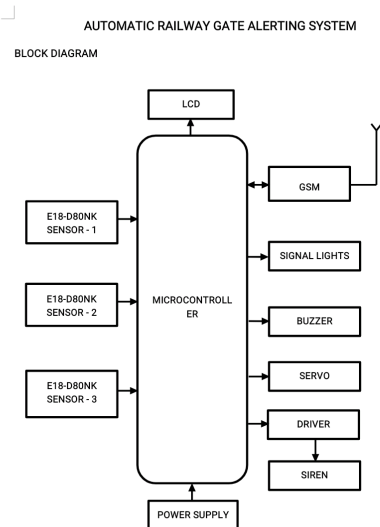
Buzzer: Use to generate a beep sound for signaling the arrival of train.

HARDWARE

REQUIREMENTS:

- AURDINO UNO
- PIR SENSOR,
- ,GAS SENSOR,
- FIRE SENSOR,
- VOLTAGE SENSOR,
- CURRENT SENSOR,
- WIFI MODULE,
- ENERGY METER,
- LCD,
- POWER SUPPLY.

LCD(16x2): An alphanumeric LCD (16x2) is used to display the message related to arrival and departure of train.



SOFTWARE REQUIREMENTS:

- ARDUINO IDE,
- EMBEDDED C

Limitations of exiting system:-

- ☐ Chances of human error.
- ☐ Time consuming.
- ☐ A lot of human resource is required.

Advantages:

- ☐ Reduces chances of human error.
- ☐ Less time consuming.
- ☐ No human resource is required.
- ☐ Safety and quality of services
- ☐ Accident avoidance

CONCLUSION

The present existing system is manually and human controlled system, once the train leaves the station, the stationmaster informs the gatekeeper about the arrival of the train through the telephone. Once the gatekeeper receives the information, he closes the gate depending on the timing at which the train arrives. Hence, if the train is late due to certain reasons, then gate remain for a long time causing traffic near the gates. No centralized system is available, presently signals are control by mean of interlocking

and warning signs and signal device, which is totally semiautomatic system. By employing the automatic railway gate control at the level crossing, the time for which it is closed is less compared to the manually operated gates and also reduces the human labour.

Reference:

1. Ahmed salih mahdi,al-zuhairi,and crossing control based sensors , international journal of computer trends and technology
2. Krishna, shashiyadav and Nidhi,"automatic railway gate control using microcontroller", Oriental journal of computer science & technology, vol.6,no4, December 2013
3. J.banuchanear,v.kaliraj, p.balasubramaniam,s.Deepa, n.thamilarasi,"automated unmanned railway level crossing system" in international journal of modern engineering research volume.2, issue.1,jan-feb 2012 pp-458-463
4. Chih-wen LI;chia-cheng Chu;wei-lun Fong; Hwang-cheng wang,"intelligent information hiding and multimedia signal processing (IIH-MSP),2014 tenth international conference on ,vol.,no.,pp.799-802,27-29 Aug.2014
5. [5] Stout, M. B.: "Analysis of Rectifier Circuits", Elec.Eng., vol. 54, September, 1935.
6. Jacob Millman Christos C. Halkias.: "Electronic Devices And Circuits", Tata McGraw-Hill Publishing Company Ltd. Sep, 2003.
7. Atul Kumar Dewangan, Meenu Gupta, and Pratibha Patel, "Automation of Railway Gate Control Using Micro-controller, International Journal of Engineering Research
8. Xishi Wang, Ning Bin, and Cheng Yinhang, "A new microprocessor based approach to an automatic control system.", International Symposium on Industrial Electronics, pp. 842-843, 1992.

9. Pradeep Raj, “Increasing accidents in the unmanned level crossing of the railways”, 2012.
10. Siti Zaharah, “Transit District Advance Automated Train

Detector System Case Study Description”, pp: 115-135.