

Automatic Railway Traffic Gate Control

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Abstract

Rail road 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. There are many railways crossing which are unmanned due to lack of manpower needed to fulfill the demands. Hence many accidents occur at such crossing since there is no one to take care of the functioning of the railway gate when a train approaches the crossing. The main objective of this paper is to manage the control system of railway gate using microcontroller. The proposed model has been designed using 8052 microcontroller to avoid railway accidents occurring at unattended railway gates if implemented detection of train approaching the gate can be sensed by means of two sensors placed on either side of the gate. This work utilizes the two sensors placed on either side of the gate. This work utilizes two powerful magnetic sensors is fixed at upside and similarly the other magnetic sensor is fixed at down side of the train direction. Sensors are fixed on both sides of the gate. We call the sensors along the train direction as foreside sensor and the other as after side sensor.

Keyword:-Railway Gate, Level Crossing, Microcontroller, LED, Anti collision device and Track switching

Introduction:-

A microcontroller can be compared to a small stand alone computer it is a very powerful device which is capable of executing a series of preprogrammed tasks and interacting with other hardware devices. Railroad is one of transient mode which has an important role in moving passengers and freights. However 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 its safety. Now a day's India is the country which having world's largest railway network. Over hundreds of railways running on track every day. As we know that it is surely impossible to stop, the running train at instant is some critical situation or emergency arises. Train accidents having serious repercussion in terms of loss of human life, injury, damage to railway property. These consequential train accidents include Collisions Derailments, Fire in Trains, and Collisions of trains at Level Crossings. In our country is a progressive country.

Literature Review:-

At present the existing system is manually and human controlled system once the train leaves the station. The station master informs the gatekeeper about the arrival of the train through the telephone. Once the gatekeeper

receives the information then 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 closed for a long time causing traffic near the gates. There is no centralized system is available presently signals are control by mean of interlocking and wrong signals and signal device which is totally semiautomatic system. The automatic railway gate control at the level crossing and anti collision device. The time for which it is closed is less compared to the manually operated gates and also reduces the human labor. This type of gates can be employed in an unmanned level crossing where the chances of accidents are higher and reliable operation is required. Since the operation is automatic error due to manual operation is prevented. And implementing the work railway system can be centralized which can control the train collision accidents.

Methodology:-

When train crosses the first sensor that is S1.Sensor S1 start incrementing to the microcontroller and microcontroller decides to close the railway crossing because the microcontroller senses that the railway crossing is open before sensing the sensors. Instruction that the railway crossing is closed by switch SW2

One of the major advantages of this system is its simple circuit and working principle. The circuit is divided into three parts. First one is the microcontroller section second is the IR sensor section kept on rail and third is the servo motor which is used to operate the gate . All of them are discussed in detail in coming sections.The fig 4.1 shows the detailed circuit diagram of the system. By employing the automatic railway gate control at the level crossing the arrival of train is detected by the sensor placed on either side of the gate at about5km from the level crossing. Once the arrival is sensed, the sensed signal is sent to the microcontroller and it checks for possible presence of vehicle between the gates, again using sensors. Subsequently, buzzer indication and light signals on either side are provided to the road users indicating the closure of gates. Once, no vehicle is sensed in between the gate the motor is activated andthe gates are closed. But, for the worst case if any obstacle is sensed it is indicated to the train driver by signals(RED) placed at about 2km and 180m, so as to bring it to halt well before the level crossing.

Project Development:-

Now a days, India is the country which having world's largest railway network. Over hundreds of railways running on track every day. As we know that it is definitely impossible to stop the running train at immediate is some critical situation or emergency arises. Train accidents having serious consequence in terms of loss of human life, injury, damage to Railway property. The concept of the model is to control the railway gate using microcontroller or anti-collision technique

Observation:-

At present the existing system is manually and human controlled system once the train leaves the station. The station master informs the gatekeeper about the arrival of the train through the telephone. Once the gatekeeper receives the information then 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 closed for a long time causing traffic near the gates. There is no centralized system is available presently signals are control by mean of interlocking and wrong signals and signal device which is totally semiautomatic system

Conclusion:-

A new approach for improving safety at LCs and train collision on IR has been suggested. Formats have been given to maintain records of LC inventories accident/incident reports. A regular assessment of safety performance should be done. This approach should be able to bring down the rising trend in accidents at LCs and train collision accident. This project uses the present infrastructure of railways e.g. present signaling method and meets all the requirements to have an automatic controlling of the railway traffic. It provides the supervision and control system provide the mean for real time inspection review and data collection fo the purpose of maintenance on the movable and fixed facilities for the guarantee of operation safety and maintenance efficiency as well as the safety appraisal decision-making system based on the share of safety data.