



Security system to adopt in railway tracks for additional safety

KEY WORDS

Ultrasonic sensor, ARDUINO NANO ,LCD display, Buzzer.

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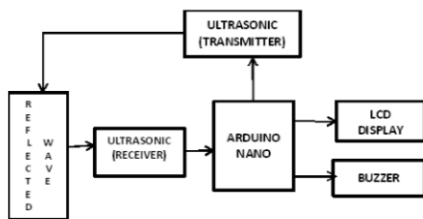
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ABSTRACT

The use of RF has proved to be very beneficial in developing collision avoidance system. In this paper security system to adopt in railway tracks for additional safety is proposed. Objectives of the system are to perceive dangerous situation in railway tracks, such as suicide commitment attempts, crossing of humans/animals/vehicles detecting bombs placed by terrorists and sending information to the train driver about the situation. The system consists of ultrasonic sensors, ARDUINO Nano, Relay circuit, Buzzer and LCD display. Ultrasonic sensor is interfaced with ARDUINO Nano to detect the presence of human beings/animals/vehicles and to measure the track distance. The detected information is send to the train driver by indication of Buzzer sound and by the message displayed in LCD display. In the present day we are using the measurement of track distance by using high cost LVDT with less accuracy, but we use the less cost ultrasonic sensor for above process with high accuracy. The importance of this project is applicable both day and night time detection purpose. The whole system is presented combining hardware and software. This system has the potential to detect the obstacle and stop the collision.

INTRODUCTION

The Railway network is the world's biggest transport system. The Indian Railway is one of the largest railway networks in the world. Transport is very important to carry the passengers and goods from one place to another. The better transport leads to more trade. Economic level is mainly depends on increasing the capacity and level of transport. Train accidents are commonly happening throughout the world because of collision, derailments due to unnoticed gaps between rails and causes great loss of human lives. Moreover, human beings/animals crossing the railway track meet accidents instantly. This project presents an implementation of an efficient and cost effective solution suitable for railway application. The proposed system will be useful for detecting abnormalities in railway tracks such as suicide commitment attempts, detecting bombs placed in railway tracks by terrorists. Here we are going to use ultrasonic sensor to detect any obstacles in the railway track. When any obstacle is detected, the information is send as a message and alarm sound by using LCD display and Buzzer.



TYPES OF INCIDENT:

Type of incident	Frequency	Percent
Fall from running train	6	5.8
Walking along the side of or through the track	17	16.3
While crossing the track	34	32.7
Lying across the track	6	5.8
Jumping in front of the train	20	19.2
Due to collision of motor vehicle and train	3	2.9
No exact history	18	17.3

Asst. Professor, Source: Type of incident happening in railway track

APPLICATIONS OF THIS SECURITY SYSTEM

Used to avoid accidents, detect obstacles and human beings in the track, useful for reducing suicide commitment attempts, detecting bombs placed in railway tracks by terrorists.

CASE STUDY

Reportedly, about 15 percent of the deaths along the railway tracks are due to suicides. On 26 Dec 2016, after failing to convince their families for their marriage, a couple committed suicide by coming under a train on the outskirts of Saijpur village of Anand's Borsad taluka on Sunday morning. Twenty-two year old Bipin Parmar and 20-year-old Bhumika Parmar, both residents of Khanpur village of Borsad taluka had slept on the railway track near Saijpur to commit suicide. Their bodies were recovered after Vadodara- Kathana passenger train ran over them at around 6.15 am early.

CONCLUSIONS

Our results show that the proposed framework has a good performance in detecting relevant events. Event detection is performed very fast and accurately. It does not give false output. It has been estimated that if the system is implemented in the railway networks accidents can be prevented in railway tracks.



The idea can be implemented in large scale in the long run to facilitate better safety standards for rail tracks and provide effective testing infrastructure for achieving better results in the future. Many human lives and many properties can be saved if this system is implemented. The scenario of accident in Trains will be controlled with the help of this project

REFERENCES:

- [1] "Accident analysis related to the train movement in a track section in ZSR condition", L'ubomir Pekar, Maria Gustafikova ,Zuzana Lobotkora, September 2014.
- [2] "Sensor based identification system for train collision avoidance", T.Dhanabalu, S.Sugumar,S.Suryaprakash,A.VijayAnand, March 2015.
- [3] "A secure freight tracking system in rails using GPS technology", V.Ashok, T.Priyadarshini, N.Ragavi, B.Rajashree, S.Sanjana, May 2016.