

Railway Safety Assurance

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Abstract - As we know now-a-days, accidents are happening in every local railway tracks. Like unwanted deaths of humans and animals, suicide cases etc. To get rid of this danger of innocent's life we are planning to work on this project. Basically our project deal with the safety issue of human and animal's life. The basic ideology behind this project is to protect the victims. This will be very helpful in feature to instant escape from danger.

1. INTRODUCTION

Railways are one of the primary medium of transport in India. Now-a-days we hear that while crossing the railway track many people or animals get injured or stuck in between the railway track. So, considering their safety issue we planned to work on this project. The proposed railway system is fully automated using Passive infrared, GPS, Arduino. It can be operated only by an authorized user. The sensor is kept at the edge of the railway tracks. All the information such as the operator of the engine, current location of the communication system and the distance values between the train and obstacle spot will be updated to ACCICAUTION for every 15 seconds. Based on the received data, triggering actions will be performed. If it finds any obstacle, then the system will stop and there after using trigger and react option of things speak an automated message which consists of latitude and longitude of the system will be sent to the train. The train can be stopped to avoid accident.

II. HARDWARE REQUIREMENT

- PASSIVE INFRARED ENHANCED
- RADAR BASED DEVICE
- ULTRA VIOLET RADIATION
- ARDUINO

III. SOFTWARE REQUIREMENT

- MY SQL
- FIREWALL
- ECLIPSE (JAVA, CSS, JAVASCRIPT)
- DATA BASE

IV. WORKING

- The proposed railway system is fully automated using Passive infrared, GPS, Arduino. It can be operated only by an authorized user. The sensor is kept at the edge of the railway tracks. All the information such as the operator of the engine, current location of the communication system and the distance values between the train and obstacle spot will be updated to ACCICAUTION for every 15 seconds. Based on the received data, triggering actions will be performed. If it finds any obstacle, then the system will stop and there after using trigger and react option of things speak an automated message which consists of latitude and longitude of the system will be sent to the train. The train can be stopped to avoid accident.

- It is the same principle in ALL Infra-Red proximity sensors. The basic idea is to send infrared light through IR-LEDs, which is then reflected by any object in front of the sensor. Then all you have to do is to pick-up the reflected IR light. For detecting the reflected IR light, we are going to use a very original technique: we are going to use another IR-LED, to detect the IR light that was emitted from another led of the exact same type! This is an electrical property of Light Emitting Diodes (LEDs) which is the fact that a led produce a voltage difference across its leads when it is subjected to light. As if it was photo-cell, but with much lower output current. In other words, the voltage generated by the leds can't be - in any way - used to generate electrical power from light, It can barely be detected. that's why as you will notice in the schematic, we are going to use a Op-Amp (operational Amplifier) to accurately detect very small voltage changes.

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- The proposed system is implemented using two microcontrollers such as Arduino Mega and Arduino Uno. Only authorized users allowed to start the machine. It is done using RFID reader. The distance is measured using ultrasonic sensor. The information is displayed using Liquid Crystal Display (LCD) module. The latitude and longitude are measured using GPS and it display live streaming of video. All the information such as GPS information, Distance Information, Login Credentials is getting updated in ACCICAUTION for every 15 seconds. ESP8266 is used to establish an internet connection and transfer the data to ACCICAUTION. L293D motor driver is used to control the DC motors. The lane is detected using IR sensor. Based on the information getting updated on the cloud, the train can be started or stopped.

V.ADVANTAGE

- It cost very low compare to existing system.
- Very accurate detection.
- Accidents reduces.
- Great level controller

VI.FUTURE ENHANCEMENT

- In future we will be using the CCTV systems with IP based camera for monitoring the visual videos captured from the track.
- We are using live video streaming for more security.
- It will also increase the security of both the rails and passengers from terrorisms and crime.

VII.CONCLUSION

It is the need of the hour to safeguard the people from railway accidents and ensuring the safety throughout the journey. There are many people are using trains as their mode of transportation and train can carry many passengers at a time. The growing population needs more trains for the transportation where in which safety is the main criteria. The developed communication system can pass reliable information to the train well in advance. The engine driver

can control the train based on the information passed by the communication system. The Digitalization of railways and ensuring safety features using fast and reliable communication system makes railway a better mode of transport than the others.

VII.REFERENCE

- WIKIPEDIA
- GOOGLE