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Railway Track Fault Detection Robot

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ABSTRACT

In this paper, we are making a railway track fault detection robot using infrared sensors which is used to detect the crack or fault in the railway track .Most of the accidents are caused in India due to failure in cracks or fault in railway track. By implementing our robot on the track and if crack found then it would send the location of area via Bluetooth to cell phone. The model is based on the arduino microcontroller ,which detects the crack present on track and sends signal to buzzer to raise the alarm which makes sense that it has found the crack. It is controlled by the motor which is designed to run on track so that it can find crack. It is a model of 3 wheeled robot which has capabilities to run on railway model track.

Keywords: Railway track, buzzer, arduino,

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I. INTRODUCTION

The Indian Railway Network is one of the largest networks in the Asia. It deals with many circumstances and issues which are expected to fix at a instance. It is the major source of the country's income and backbone of country's transportation. It is one of the cheapest mode to travel across India andmost of the people are preferring to travel by train. As there is a huge trust of people on railways, so the system should be error free and safe. In most of the cases the accidents are caused by cracks on track which can be caused by various reasons. To make sure that whole track is good we used a robot to detect the crack and prevent from severe accident.

II. WORKING PRINCIPLE

The Indian Railway Network is one of the largest network in the asia.It deals with many circumstances and issues which is expected to fix at a instance. It is the major source of the country's income and backbone of country's transportation. It is one of the cheapest mode to travel across India and most of the people are preferring to travel by train. As there is a huge trust of people on railways, so the system should be error free and safe. In most of the cases the accidents are caused by cracks on track which can be caused by various reasons. To make sure that whole track is good we used a robot to detect the crack and prevent from severe accident.
the robot and it can also used to move the robot remotely and can also be used to see result on the cellular phone via wifi signal.

III. COMPONENTS USED

1 THE BLUETOOTH MODULE(05 MODULE)

The module is based for the transparent wifi serial connection setup. The HC-05 bluetooth module is made for splendid communication with arduino making it a effective solution for wifi communication

2 ARDUINO UNO

The Arduino uno is the heart of the robot which is the central system of the robot. It has various switches and

ports which makes it easy to connect with USB cabel to a computer

3 LCD (LIQUID CRYSTAL DISPLAY)

A LCD version is defined as the most exceptional opportunities most regularly used practice . This module is used for low cost and can be easily understandable

4 L293D (MOTOR)

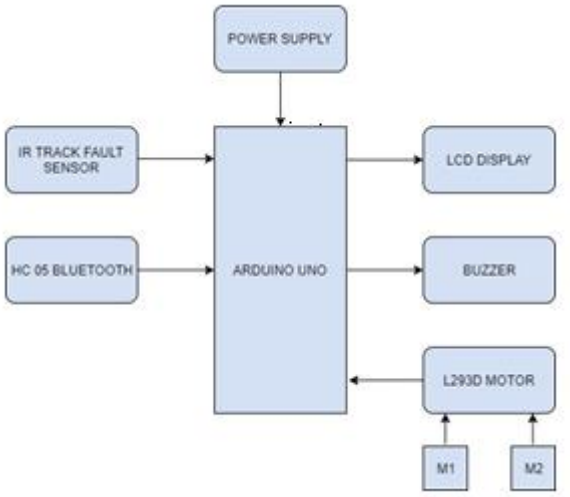
It is the type of motor which is used for the movement of the robot in forward and backward direction. It is used to manipulate the DC motor in the direction which user wants.The robot is connected with the DC motor for the two n fro motion of the system.

Figure 4

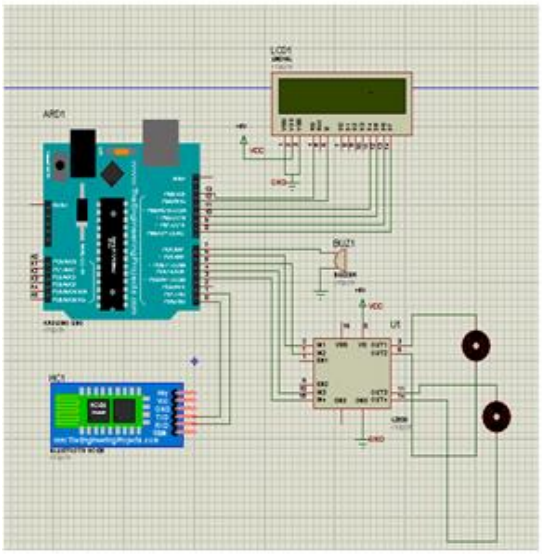
5 ALARM RAISING BUZZER

A Buzzer is the audio signalling device which is used for raising the alarm if any fault has found. It is acting as a output device which make sure that the alarm indicates the fault, so that further actions should be taken.

IV. BLOCK DIAGRAM



V. CIRCUIT DIAGRAM



VI. EXPECTED RESULTS

When the robot is placed on railway track and if fault is detected then the message would be send on the LCD screen as a output. After finding fault it additionally displays the particular message.
Case (1):
When there is no fault on railway track , it will display a message - TRACK IS GOOD
Case (2):
When there is Fault on railway track, it will display message - TRACK IS FAULTY

VII. CONCLUSION

In this paper we have focused on the detection of the cracks of railway tracks with a effective manner. It detects the cracks by the use of infrared sensors and Bluetooth module. In order to reduce rail accidents in India . There should be a proper system to detect and prevent rail accidents. Mainly the system is proposed for the saving the life of passengers from the accidents which are occurring due to derailment of track.It is the most effective and precise system for the detection of crack and mainly it is error free. It can be used for the places where humans can't reach such as in tunnels and bad weather conditions.

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