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Review of Railway Track Fault Finding System

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***Abstract*— In India so many transport facilities is available. In which railway played vital role to transport of Indian population. The Indian population is on second position in world. So, transportation problem is reduced because of Indian railways. India is the second largest country that uses the railway for transport. But, now a day's so many accident of railways take place & so many people have died & loss of property takes place. This accident takes place due to crack in rails, landslide on the track in hill areas. All trains are in speed, so train driver cannot stop train immediately. Because of that so many accident are take place. Main problem of railway analysis is that detection of crack in track & also landslide in hills areas. This paper is going to gives the idea about detection of crack in track, landslide in hills area. In this project we are going to do the robot. This robot moving between the two station & detect the crack in track, landslide in hills area. This detected information like position where the crack is present & picture of landslide are send to the nearest station. So, Because of this information the station manager will understand that some problem is presenting on track. Because of this we will avoid the accident of train.**

***Keywords*—Microcontroller, GPS, GPRS, GSM, Camera & LED-LDR.**

I. INTRODUCTION

India is big country in which millions of people live. Transport has played very good role in growing the economics condition of country. The Indian railway network today has a track length of 113,617 KM over a route of 63,974 KM and 7,083 stations. It is the fourth largest railway network in the world exceeded only by those of the United States, Russia and China. In India railway transport the 30 millions of passenger & 3 million ton of product in all over in India. Means India's growth depends on the railway network. But, now a day's so many accidents take place. Out of which more accidents have happened only due to crack in track. This happens because lack in cheap & efficient technology to detect the crack in track. Also, because of lack in proper maintenance of railway track. Indian railways are growing every day, for that purpose we required the proper maintenance & detection of crack in rail track.

II. PROPOSED WORK

The fig. 1 shows that block diagram of proposed work which is working as robot on a railway track. In this project the microcontroller played very important role. In this system the operation principle involved in crack detection by using concept of LDR (Light Dependent Resistor).In the proposed system, the LED will be connected to one side of the rails and the LDR to the opposite side. This scenario is present on both rails. When robot is moving on the track this LDR- LED detects the crack of both rails. If crack is present in track then LED light will falls on the LDR & hence, LDR resistance will reduce. This reduction in resistance will be proportional to intensity of light. At normal level, when there is no any crack in track, then resistance of LDR is high. When crack is detected by robot by using the LDR-LED, this detected information is transmitted through GSM system & position of crack is send by GPS system to the nearest railway station. By using this method we find out the cracks in tracks.

Also, in this project we use the camera. This camera is used for the purpose of taking the pictures or performing video recording of front side of robot and this data is send to the nearest station through GPRS system. In India so many trains are running from hilly area. At hilly area landslide takes place during the rainy season on the track as shown in fig. 3. Due to this camera all picture or video recording will be transferred to nearest station. Also in forest area so many animals come on track as shown in fig. 4. Station manager will see this picture & send back message to robot start the horn, due to that all animal will be run away from track. This system saves the life of forest animals.

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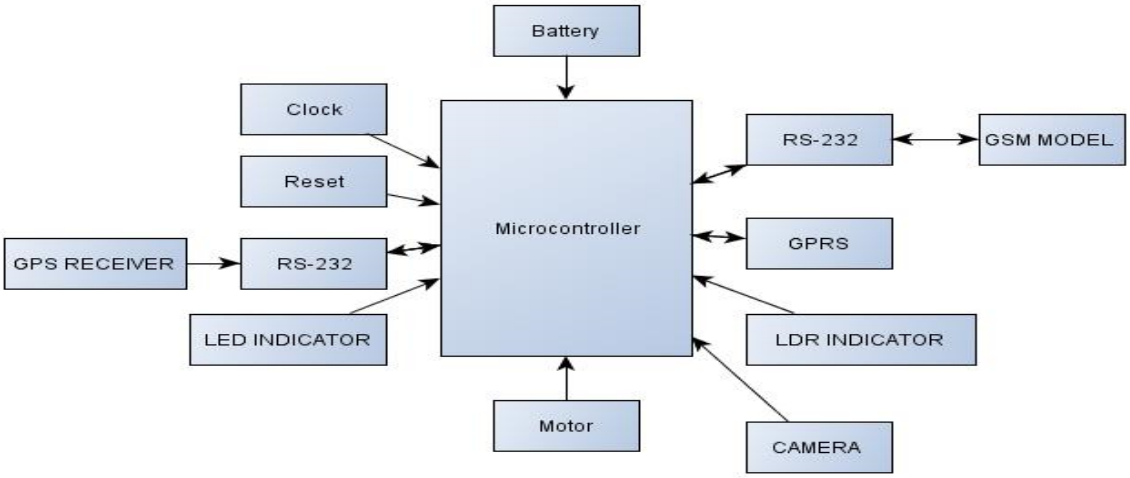


Fig. 1 A Block Diagram of working operation of Robot on track

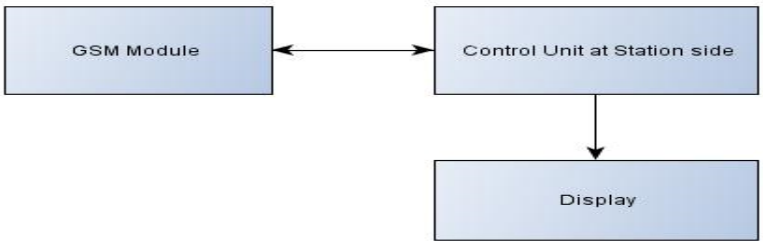


Fig. 2 A Block Diagram control unit at station side

Figure: 2 shows that control unit at station side which controls the robot & will monitor the activities of robot.



Fig. 3 Landslide on railway track in hilly area



Fig. 4 Animal on railway track (Forest Area)

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III.OPERATION OF SYSTEM

Figure: 1 shows working of robot that will use for fault of railway track. The proposed work consists of different block:

A. Microcontroller

The microcontroller is the heart of project. We will use the ARM controller for the proper operation of robot.

B. LDR-LED For Track Detection

The LDR-LED system will use for fault detection in track. The operation of LDR-LED has explained in section II. This the most important part of this project.

C. GSM Module

GSM module will use for the transmission reception of message to/from the nearest station.

D. GPRS & GPS Module

GPRS & GPS module will use for position detection.

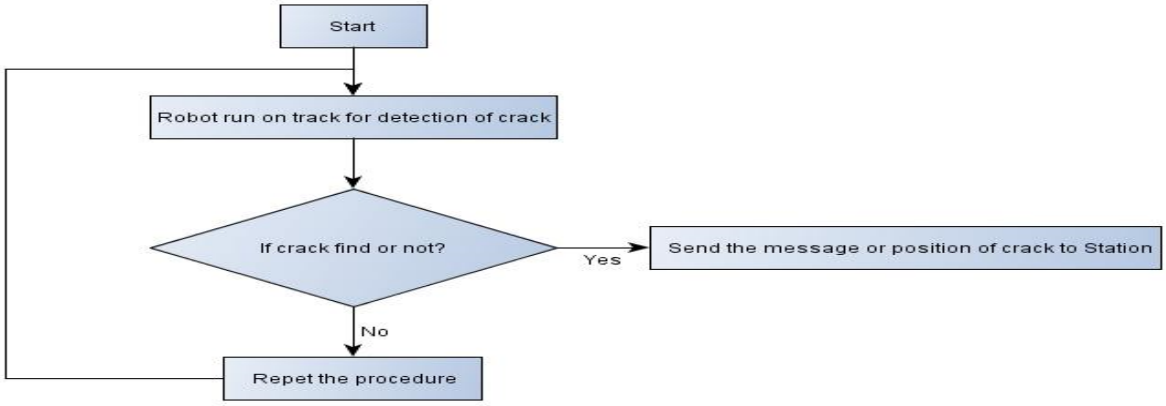
E. Camera

Figures Camera will use for capture of picture of front side of robot.

F. Motor

Robot run on railways track for that we require four wheels. To run this wheels four motors are require.

IV. FLOW CHART



Flow chart shows the operation of Crack detection.

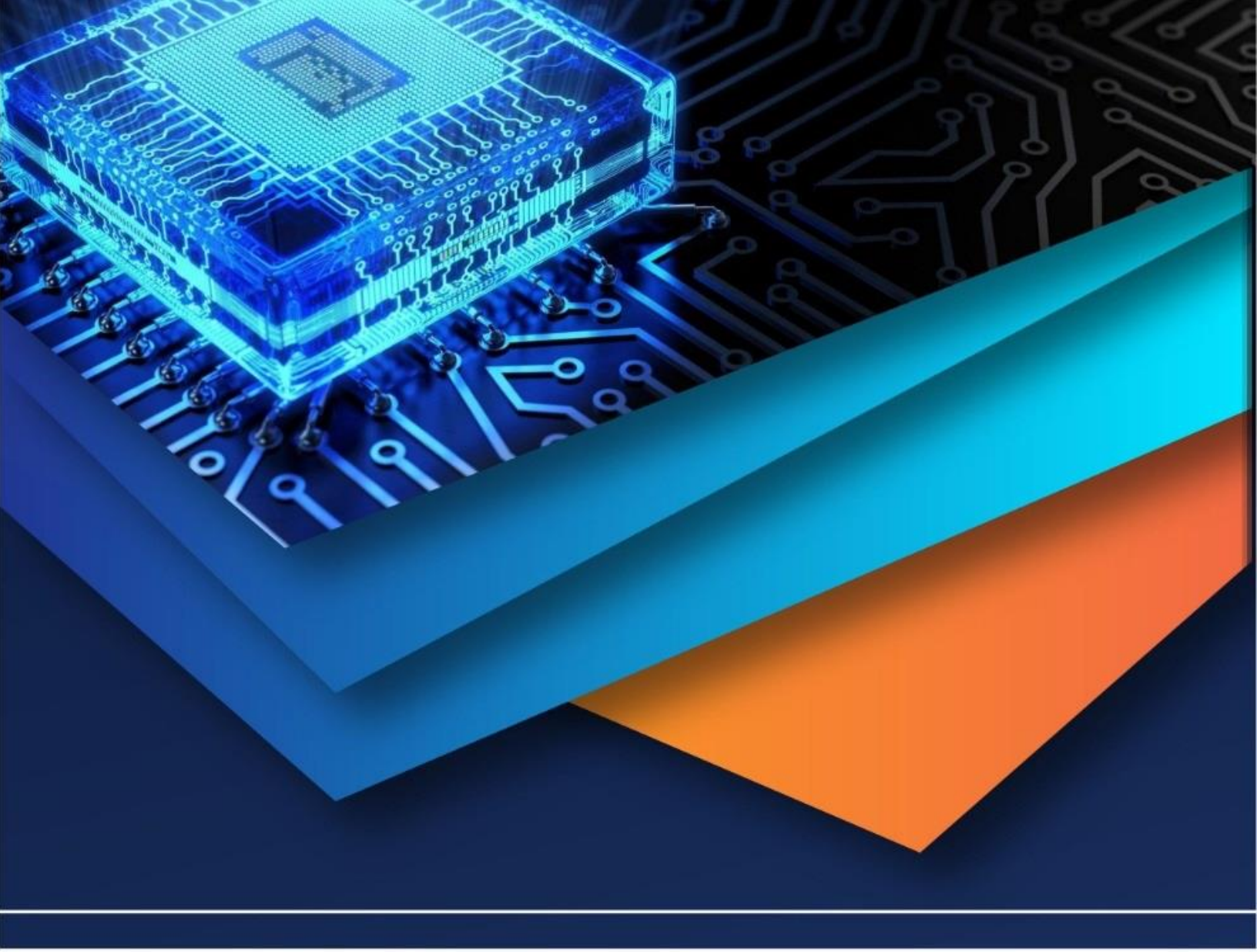
V. CONCLUSIONS

This paper will use for the avoid the accident of railway. This system is cheap & efficient as compared to other system. By using this system we analyze the position of crack in track. Because of this we will take care of the track & avoids the accident. Also save life of travelling people & the money of country.

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