IJARCCE ISSN (O) 2278-1021, ISSN (P) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

ISO 3297:2007 Certified ⁜ Impact Factor 7.918 ⁜ Vol. 12, Issue 2, February 2023

DOI: 10.17148/IJARCCE.2023.12241

A ROBOT FOR SPOTTING & LEVELING OF CHUNK HOLE USING IOT

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Abstract: In the proposed system our main aim is to detect the pot holes and automatic levelling of the detected pot holes. When we go back in history, we get to know that India has grown tremendously, due which many numbers of accidents are taking, place which in turn is affecting both people and vehicle. Potholes have become a major reason for road accidents and loss of human lives . According to the survey reports of " Road Accidents in India " , almost 1,42,485 people have lost their lives due to this pothole leading to road accidents in 2011 . Nearly 1.5 per cent or nearly 2,200 fatalities are caused due to poor condition of roads . The problem is worth solving as it helps saving people's lives and prevents road accidents, thereby helps in growth of the nation having pothole free roads. The ultrasonic sensor measures the depth of the potholes & the normal road and compares between them. Once vehicle detects the pothole, the levelling mechanism gets activated and it will level the pot holes with the normal road. The movement of the model can be controlled both manually and automatically by the user through the android application. This system provides the more accurate results and helps in avoiding the accidents.

Keywords: Arduino UNO, Ultra Sonic Sensors, Wi-fi Modules , H Bridge , DC Motors**.**

I. INTRODUCTION

Over the last two decades, India has grown tremendously , this growth is also directly leading to rapid increase in the vehicle population, thereby potholes on roads have increased due to increase in vehicles . The roads make a crucial contribution in developing the economic it also brings important social benefits . The vital importance in order to make a nation grow and develop are this roads . The road infrastructure is most important of all public assets. However, due to repeated movement of heavy loaded vehicle and weathering on roads , the pothole are formed which in turn is affecting human life very badly. People and vehicles are affected by the pothole problem.

The formation of the potholes are due to heavy rains and movement of heavy loaded vehicles , also become a major reason for road accidents and due which many people have lost their life . Potholes can cause damage to car tires impact on the lower part of the car and the presence of potholes leads to emergency braking and steering wheel operation leads to car crashes and serious accidents . According to the survey reports of " Road Accidents in India " , almost 1,42,485 people have lost their lives due to this pothole leading to road accidents in 2011 .

Nearly 1.5 per cent or nearly 2,200 fatalities are caused due to poor condition of roads . The main problem is that potholes will lead to many road accidents thereby just detecting potholes will not help solving the problem completely hence it is necessary to fill them to avoid road accidents. The problem is worth solving as it helps saving people's lives and prevents road accidents, thereby helps in growth of the nation having pothole free roads.

II. OBJECTIVES

The main goal of this robot is to reduce the potholes, which in turn helps in reducing of risk of accidents. The model will try to sense and detect the pothole on the road using ultrasonic sensors **.** Once the pothole is detected the filling and levelling mechanism get activated.

The tank or filler will start filling the detected pothole & the roller will level the road. The other sensor would detect for any avoidance in the road while the model is in moment**.** The model is rechargeable i.e, it can be recharged using the solar panel, AC pins or rechargeable battery motors are installed. The model can be controlled both automatically and manually by connecting through an app called UDP/TCP tester.

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III. PROPOSED SYSTEMS

India is one of the developing country which is well known for its wide range of roads, however these roads have many potholes in many areas which has been formed due movement of heavy vehicle, being a major reason for road accident and loss of life every year. Therefore, our main motivation is to make a prototype which helps and reduce the risk of accidents.

IV. LITERATURE SURVEY

LITERATURE SURVEY 1:

Pit free: Pot-holes detection on Indian Roads using Mobile Sensors

In Indian roads, we can continuously see the Pothole, which are either dried or waterfilled. To make the driving safe, it must has to be necessary to detect the potholes and check their level of depths in both conditions. In this model the development of a structure, where the detection and deep estimation could be determined. However, the plan and a assemble or construct the semi-Automatic Robot, where it will send out a equal quantity that is required amount on concrete quality, which is used to detect pothole, and make the levelling process on a released concrete, and the filling of the pothole on the road is completed. From this above trail ,the robot can be controlled both manually and automatically , if the robot controlling person need not use the robot automatic then he can also use the mobile or android application can be used for controlling and monitoring the robot needfully. Where we use Machine learning technology for identification of potholes and the patching of potholes. The data capture from the GPS may not give a accurate results.

LITERATURE SURVEY 2:

Identifying and Reporting of Potholes and Humps using IoT

The safeguarding of the roads is the primary dispute or the challenges that has been arising in our nation. The growth of the Indian economy is noticeably by the maintenance of a road well. Finding the concrete problems such as vehicle damage and assistant in the road maintenance. Many current attempts in the transportation field network ambition or purpose to give information regarding traffic patterns and roads. The roads in India have potholes which are commonly wet or dry. Hereby, it will plays an important role in detecting the potholes and its volume of their depth in both situations assure in the safe driving. In this project, we use the Raspberry Pi in this model and we create the ultrasonic sensors in the model and which it will allow the detection and measuring the depth of the estimating utilizing.

LITERATURE SURVEY 3:

Road Conditions Detection Using Arduino Based Sensing Module and Smartphone

Road maintenance is a major task so detecting this pothole is most important one . Due to this formation of pothole the roads condition has become dangerous . The cause of natural events like tropical rain , flooding & many more things resulting in dangerous roads leading to a condition where it becomes unsafe for driving . The poorly maintained surroundings of the road have also been one of the reason for the dangerous road conditions leading to many road accidents. There might be many unexpected hurdles on the roads , due to poor lighting facilities along the road sides many road accidents have been taking place .

So , while driving in the evenings or night times headlights are not only sufficient for the driver to assist . Also due to this poor road conditions , the vehicles consume more amount of fuel then the usual one which in turn leads to waste of fuel , petrol & petroleum products . We have proposed in this system 'Pothole and hump Detection and vehicle speed control System' to inform that the driver should have a control over the vehicle speed and also about the pothole or humps . Ultrasonic sensors , sense the potholes and measure the depth of the potholes. The information about the nearby roads can be easily obtained in the vehicle.

V. EXPECTED OUTPUT

- It sense and detect the pothole on the road using ultrasonic sensors .
- Filling and levelling of pothole .
- To detect any avoidance on the road , while the model is in moment and stop .
- The model can be controlled both automatically and manually .

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VI. CONCLUSION

The future of the road transportation system lies in the networks of vehicles. Numerous ongoing projects aim to give drivers all the information they require regarding traffic flows on the highways. The goal of the pothole detecting system is to warn drivers about the state of the road so that they can drive safely. The best design has been suggested and put into practise in terms of price, area coverage, and deployment costs. The use of pothole detection as one application within the larger framework of the intelligent vehicle warning system has been the focus. Given the established channel capacity, we may conceive a more general architecture enabling more applications of this type, eventually leading to an Intelligent Road Information System to improve road safety in India.

VII. ACKNOWLEDGEMENT

We are appreciative to have reached this point in our mission because it required a lot of help and work from many people to finish and had such a big impact on our enterprise. We are immensely appreciative and humbled by everyone who has helped us transform these concepts into something more profound.

We would especially like to express our gratitude to **Prof. Dhanraj S** (Assistant Professor, Computer Science and Engineering, East West Institute of Technology), who gave us the wonderful opportunity to work on this wonderful project that also allowed us to conduct a great deal of research. We also wish to express our gratitude to the computer science and engineering professors whose suggestions enabled us to move past a lot of seemingly insurmountable obstacles.

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