ISSN 2395-1621

Automated Detection and Notification of Pothole to aid driver

[#1]Bhagyashree Ghodake, [#2]Ankita Magar, [#3]Kavita Nagargoje, [#4]Aparna Korade

[1]bhagyashreeghodake111@gmail.com
[2]ankitamagar3@gmail.com

[#1234]Department of Computer Engineering

Bhivarabai Sawant Institute of Technology and Research,Wagholi

ABSTRACT

Most of the countries are in the race of Development. India is also in the same race. In the Development of India, road transportation contributing the lion's share. In India among the three transportation systems, Road transportation is mostly transportation system. This is the reason behind increased number of vehicles in last recent years. With the number of vehicles, accidents also increased. The main reason behind this accident is Road condition. So it is necessary to maintain roads in order to save the lives. Proposed system will monitor the road condition and will detect the potholes. The detected pothole information will be provided to the driver and also to the government. So that the driver can take a preventive action to avoid pothole. And government will use this information for the maintenance of road condition.

Keywords: Potholes, Ultrasonic Sensor, Wireless Sensor Network, GPS location, Andriod Application.

ARTICLE INFO

Article History

Received: 8th December 2019

Received in revised form :

8th December 2019

Accepted: 10th December 2019

Published online :

11th December 2019

I. INTRODUCTION

Roads are the Dominant mode of transportation in India today. Most of the peoples are using Road for their daily transportation. Roads are carrying almost 85 %of the country's passenger traffic. Along with the vehicles accidents were also increased. Major reason behind this is a bad condition of road, potholes on road. Due to these potholes about 1 lack peoples are dying every year.so it is necessary to pick up the information about road condition and provide the same to government so that authorities can take preventive actions on that. So we are trying to implement a small system that will monitor the condition of road by counting the potholes on the road. The system will provide the same information to the driver so that he can take preventive action to avoid the pothole. And same Information will be provided to the government so that government can take preventive actions. The main purpose of the system is to detect the potholes and inform driver before he start his journey. The proposed system is divided into three units.

II. LITERATUE SURVAY

"A research of pavement potholes detection depends on three-dimensional projection transformation" this paper was published by JianfangQ. Hanxing, Z. WeiH. Youquan in 2016[1].According to this paper the system used image processing for detection of potholes. Depending on the analysis of the images of road , potholes were detected by this system.

"Pothole system based on Support Vector Machine" this paper was published by J. Lin and Y. Liu in 2017[2]. According to this paper a system was developed which used support vectior machine to detect potholes.

"Detection of potholes using the Microsoft Kinect sensor" this paper was published in 2017 which states

© 2019, IERJ All Rights Reserved

that potholes will be detected by using a kinetic sensors. These sensors are placed on the both side of roads which will detect the potholes. And whenever the car passes from the road information will be provided to the car driver.

III. SYSTEM ARCHITECTURE

The proposed system is classified into the four subsystems the sensor subsystem, the data processing subsystem, logging and reporting system and the power subsystem. Power subsystem starts the vehicle and it enables our all hardware components. the sensors and data processing module to start its working. The data processing module will examine the information from the sensors and output pothole data to the reporting and logging subsystem. The logging and reporting subsystem build on the android mobile device, will store the pothole locations on a network server.

Our system has mainly four modules, a mobile application module, server module, a microcontroller module and a sensing module. Various processes involved in these four modules are:

A. Mobile Application Module:

User have two options, if he is already registered the "login" option is provided. And user is new to the system then "register hear" option is provided.

User can collect the pothole notification from the system for his safe journey after successfully login.

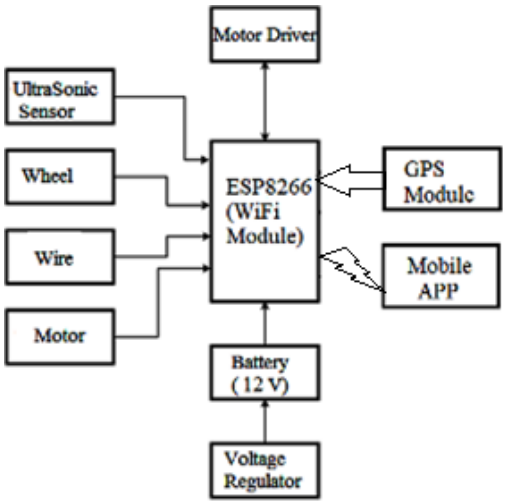

Fig 1. System architecture

B. Server Module:

This is the backend of the system. The server module is nothing but the database for system. It is an Intermediate layer between sensing and mobile application module. Its function is to store the updated information received by the sensor and provide to the requested user whenever needed. This module can also be updated frequently for information related to the potholes. Proposed system is using cloud to store the information. System is using the 000webhost cloud to store information.

C. Microcontroller Module:

The Module is responsible for coordinating the hardware and server. It collect the information collected from sensor, compare it with threashold value. If pothole is detected then information is stored in server. This information will contain count of pothole, location of pothole with longitude and latitude and time of detection of pothole.

D. Sensing Module:

This model consists, ultrasonic sensor (HC-SR04). The distances in between the car physical body and the road surface area is calculated with the help of an ultrasonic sensor. A threshold value is set such that the value based on ground clearance of the transport vehicle. The calculated distance (depth parameter) is compared with the threshold value to detect pothole or hump. If the calculated distance is greater when compared with the threshold value, then it is classified to be a pothole, and if the measured distance is less, then it is classified to be a hump.

IV. SOFTWARE REQUIREMENT SPECIFICATION

Mobile application is provided to the end user. So android studio is used to develop the android application. Java technology is used to program the application. Mysql database is used to store the database.

V. CONCLUSION

The proposed system basically serves to purposes it automatically detects the potholes and send the

© 2019, IERJ All Rights Reserved

information regarding this to the mobile applications and with the help of GPS it can display potholes in the Google map so it is helpful for driver because driver can see the potholes in the road before he drive.

The information can also be used by Government authorities for the maintenance of road

VI. ACKNOWLEDGMENT

I would like to express my gratitude and appreciation to all those who gave me the possibility to complete this report. A special thanks to guide for her help, valuable suggestions and encouragement, she helped me to collect my paper especially in writing this specific report.

REFRENCES

[1] H. Youquan, W. Jian, Q. Hanxing, Z. Wei, and X. Jianfang, A research of pavement potholes detection based on three-dimensional projection transformation, in Proc. 4th Int. Congr. Image Signal Process (CISP), Oct. 2016, pp. 18051808.

[2] J. Lin and Y. Liu, Potholes detection based on SVM in the pavement distress image, in Proc. 9th Int. Symp. Distrib. Comput. Appl. Bus. Eng. Sci., Aug. 2017, pp. 544 547.

[3] I. Moazzam, K. Kamal, S. Mathavan, S. Usman, and M. Rahman, Metrology and visualization of potholes using the microsoft Kinect sensor, in Proc. 16th Int. IEEE Conf. Intell. Transp. Syst., Oct. 2017, pp. 12841291.

[4] S. S. Rode, S. Vijay, P. Goyal, P. Kulkarni, and K. Arya, Pothole detection and warning system: Infrastructure support and system design, in Proc. Int. Conf. Electron. Comput. Technol., Feb. 2016, pp. 286290.

[5] R. Sundar, S. Hebbar, and V. Golla, Implementing intelligent traffic control system for congestion control, ambulance clearance, and stolen vehicle detection, IEEE Sensors J., vol. 15, no. 2, pp. 11091113, Feb. 2017.

[6] Samyak Kathane, Vaibhav Kambli, Tanil Patel and Rohan Kapadia, Real Time Potholes Detection and Vehicle Accident Detection and Reporting System and Anti-theft (Wireless), IJETT, Vol. 21, No. 6, March 2016.

[7] Taehyeong Kim, Stung-Ki Ryu, A Guideline for Pothole Classification, International Journal of Enginering and Technology (IJET), Vol. 4, No. 10, October 2017.

[8] Gunjan Chugh, Divya Bansal and Sanjeev Sofat, Road Condition De-tection Using Smartphone Sensor: A Survey, International Journal of Electronic and Electrical Engineering, Vol. 7, No. 6, 2016.

© 2019, IERJ All Rights Reserved