

Indication of Pothole on Roads for Safety Driving

M. Narmada, P. Munaswamy

Abstract: This paper proposes the today roads which are the central mean of transportation in India. Nowadays potholes and humps on the roads e the major problems in developing countries. In our day to day we here about many road accidents, in such cases pothole is also one of the major cause. Pothole is formed due to fatigue of the roads, insufficient pavement thickness and improper condition of roads, movement of heavy vehicles and heavy rainfall. The upholding of roads typically focuses on indecent roads which are due to potholes, humps etc. Our project mainly aims at detection of potholes and humps to avoid accidents & at the same time notify to the drivers in order to safe drive.

Keywords: Raspberry Pi, Ultrasonic sensor, GSM, GPS, Camera, Led

I. INTRODUCTION

INDIA, those second the majority populous nation on universe with quickly developing economy, will be referred to need a gigantic organize about streets. Streets are those predominant method for transportation clinched alongside India today carrying very nearly 90 percent for country's passenger movement and 65 percent of its cargo. However, the vast majority of the streets to India would limit also congested with poor surface personal satisfaction without upkeep. Regardless the place you are Previously, India, crashing may be An breath holding, multi-mirror involving, conceivably an aggregation debilitating undertaking. Over A two decades, there need been a enormous expand in the vehicle populace prompting issues for example, such that movement blockage and build Previously, amount of way mishaps. Disgraceful state about streets will be a boosting figure for movement clogging and mishap. Scientists would attempting in the region of movement blockage control, a essential analytics and only vehicular territory networks, continuously compelling reason of hour today. Streets for India regularly have pace breakers along these lines that those vehicle's speed can a chance to be controlled will keep away from mishaps. However, these velocity breakers need aid unevenly dispersed for uneven Also unscientific statures. Potholes shaped because of overwhelming rains Furthermore development about overwhelming vehicles, also get a major purpose behind traumatic mishaps and passing about human exists. On location those over specified problems, an expense successful result will be necessary that collects the data around those seriousness about potholes also humps and also serves drivers should drive securely.

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M. Narmada, PG Student, Dept. of ECE, Institute of Aeronautical Engineering, Hyderabad, India

Dr. P. Munaswamy, Professor, Dept. of ECE, Institute of Aeronautical Engineering, Hyderabad, India

II. EXISTING METHOD

Potholes can seriously compromise driver safety and road efficiency. Many researchers and transportation experts have attempted to develop appropriate pothole maintenance systems. Pavement distress detection is an intriguing topic for researchers. Existing methods for pothole detection can be divided into vibration-based methods, three-dimensional (3D) re- construction-based methods, and vision-based methods.

III. PROPOSED METHOD

In this project, we have used ultrasonic sensors for measuring the distance of an object on the road surface. When it is detected the camera captures the images and with help of GPS, the geographic location is located. The data is stored in database which further used send the information to road authorities through Email of captured images along with a particular location. An android application is used to alert drivers so that precautionary measures can be taken to evade accidents. Alerts are given in the form of flash messages such that the pothole is detected at a particular location. The message is send via GSM to a person in a vehicle.

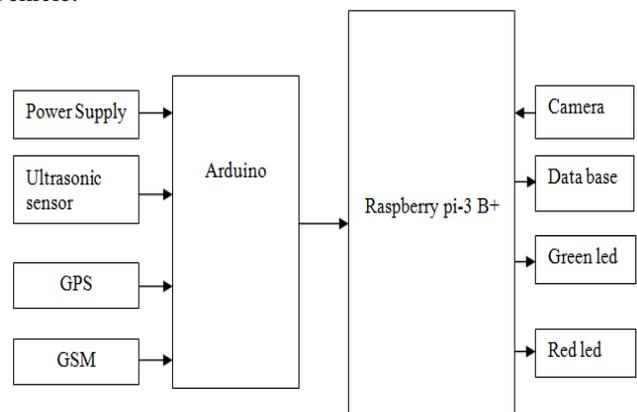


Figure.1. System Block Diagram

IV. ULTRASONIC SENSOR

Those HC-SR04 ultrasonic sensor utilization sonar with determine separation on a object like bats do. It offers fantastic non-contact reach identification for secondary exactness And stable readings to a easy-to-use one bundle. It goes finish with sensor transmitter Also collector modules. A sensor impediment sensor as stated by the display innovation incorporates a transmitter for transmitting waves towards a way surface and more a ultrasonic recipient for accepting ultrasonic waves reflected starting with those way surface or from



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obstacles over alternately out and about surface.



Figure.2. Ultra sonic sensor

GPS Module

GPS or Global Positioning system is a satellite route framework that furnishes area And run through data altogether atmosphere states of the client. GPS may be utilized for route previously, planes, ships, cars and trucks also. That framework provides for basic abilities on military Furthermore citizen clients around the globe. GPS gives constant genuine time, 3-dimensional positioning, route Furthermore timing around the world.



Figure.3. GPS Module

GSM Module

Overall framework to portable correspondence (GSM) is a plan for ETSI benchmarks deciding the structure to a propelled Mobile profit. That standard is used done approx. 85 countries on the planet including such zones concerning illustration Europe, Japan and Australia.



Figure.4. GSM Module

GSM (Global framework for portable correspondence) may be an electronic compact correspondence schema that is by used on Europe and different parts of the universe. GSM uses an assortment of chance division distinctive right (TDMA) and may be those greater part by and large used of the three electronic remote correspondence innovations GSM digitizes what are more packs information

Camera Module

The Raspberry Pi fisheye lenses capture more than 100° in view, and using more than one can image a large field of view while using less sensors. Typically the standard stereo camera calibration requires full view of the all markers in both cameras. To enable calibration for a larger variety of

arrangements with less overlap in view, we can relax the traditional constraints with some data bookkeeping and organization. Here, we used a full-frame 120° fisheye lens.

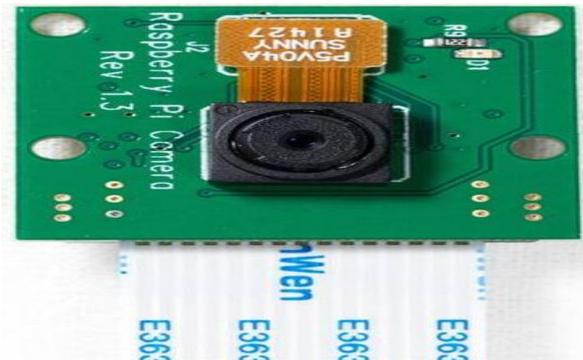


Figure.5. Camera Module

That state of those utilized Polaroid lens also positioning errors throughout those gathering of the Polaroid could bring about spiral and tangential twisting of the el picture. A Polaroid calibration, built for instance with respect to a chessboard pattern, photographs those alignment examples in distinctive positions and angles.

Flow Chart

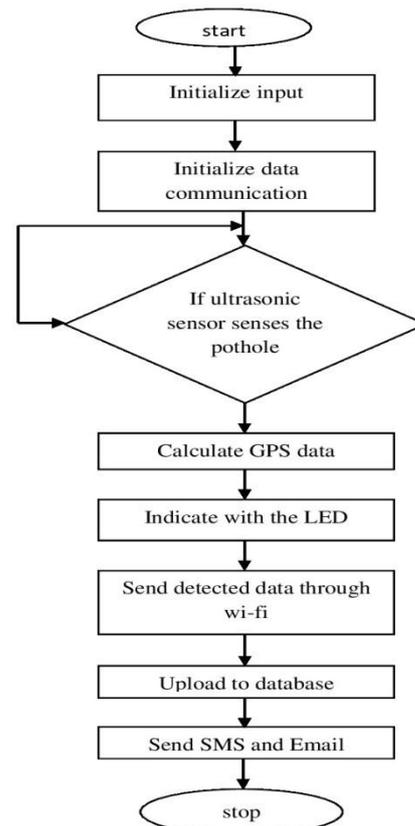


Figure.6. System working flowchart

V. EXPERIMENTAL RESULTS

The proposed system is a cost efficient method for detecting of a pothole and it provides an indication with the red led to other vehicle about an idea of bad conditions of roads. It gives a message to the concern person.



It also sends an Email with the captured image of pothole to the government authorities. It helps in repairing of a better condition of roads. The pothole indication for drivers helps in order to Prevent accident caused due to bad conditions of roads



Figure.7. Hardware Setup

When the pothole is detected by the ultrasonic sensor the camera captures image. The SMS will be sent to android device using GSM. It provides information about the pothole detection at particular location using GPS.

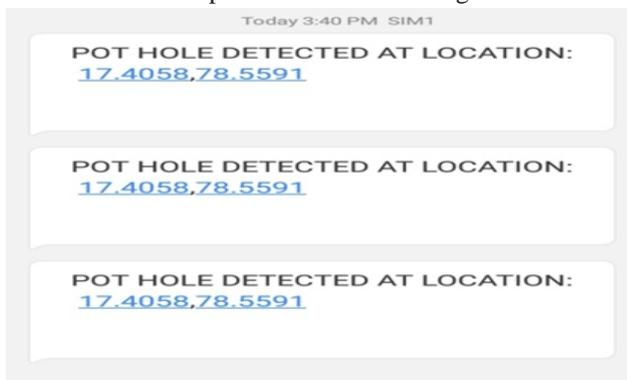


Figure.8. Pothole detected Message received by registered mobile number.

As shown in figure 8 the message received by the device

VI. CONCLUSION

In this proposed model is, programmed identification of pothole Also humps Furthermore cautioning vehicle drivers, to decrease the vehicle speed etc keep away from possibility mishaps. Those versatile requisition utilized within this framework is an extra preference as it gives auspicious alerts over potholes and humps. This serves concerning illustration a profitable hotspot of majority of the data of the legislature powers Furthermore to vehicle drivers. It will spare large portions exists Also sickly patients who middle of the road from deplorable mishaps. Great looked after streets help a real bit of the country's economy.

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