Road Waterlogging Indicator Using Ultrasonic Sensor with GPS System for Vehicle Driving Assistance

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ABSTRACT – Indian monsoon being erratic in nature leads to major disasters in cities during rainfall. Hearing from news articles and reports over 200mm rainfall cripples life in monsoon. During monsoon there are major roadblocks and accidents or mis happenings, due to non-awareness of the condition of the road and random water logging at different locations. Based on this there is an important need to maintain a complete analysis over rainfall and level of waterlogged at different locations. The system comprises of ESP32 microcontrollers. The water level is measured with respect to ground level set for each sensing device. Data from all these devices will be sent to a single cloud server. The circuit is equipped with LEDs indicating various levels of alert.

Key Words: Monsoon, Roadblocks, Waterlogging, Analysis, Microcontrollers, Alert.

I. INTRODUCTION

This project deals with problems with roads conditions due to waterlogging during rainy season. Driving vehicles in such conditions are very challenging specially at times when you are in a hurry. This project collects data from different units installed at different locations and provides you with the information to depart with the best route possible according to your destination and area of concern for your vehicle. User will have idea of the road waterlogged with certain level of water and condition before even departing from his/her location on mobile device through server.

II. LITERATURE REVIEW

The system is much advantaged for protecting the lives of people. This system is very much utilized for monitoring of the water level, flow variations in rivers and the same can be used for measuring of the water level at Dam/Reservoirs. The measured values are updated at regular intervals on the web server which is very much useful to send flood alerts also.

III. PROPOSED METHODOLOGY

The system comprises of ESP32 Microcontrollers as well as ESP32 Cam Board Microcontrollers. Both type of microcontrollers are equipped with Ultrasonic sensors for measuring the water level. The water level is measured with respect to ground level set for each sensing device. Data from all these devices will be sent to a single cloud server which will then be displayed on a website. The ESP32 Cam Board device has an additional feature that it has an inbuilt OV2640 Camera. This camera takes photo for specific threshold values and reports it to the admin. LEDs are used for indicating various levels of alert.
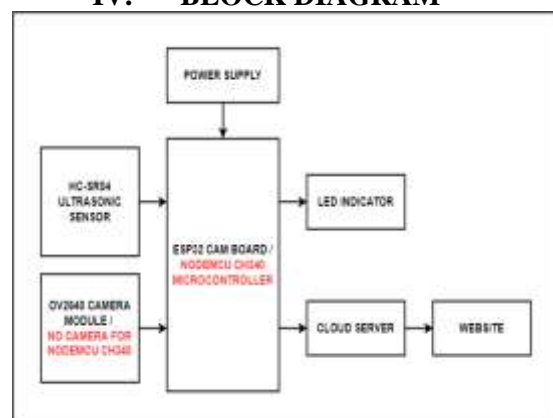
IV. BLOCK DIAGRAM

Fig. Block Diagram of Road waterlogging indicator System

V. CONCLUSIONS

The study is all about detecting the level of the flood. Based from the existing way of reporting

flooded roads researchers have concluded that the Flood (Waterlogging) Detector System using ESP can measure the height of the flood; and measurement data can be distributed to officer in charge and to the residents. The system also indicates passable and blocked road that will help commuters to avoid getting stuck in an blocked road. The system also provides camera to easily monitor the flood.

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