

DETECTION OF FISSURE USING COMPUTER VISION WITH AUTOMATED COMPLAINT REDRESSAL

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ABSTRACT

One of the most vital problems in developing countries is conservation of roads. Well maintained roads contribute a significant portion to the country's economy. Spotting of pavement distress like potholes helps drivers to avoid accidents or vehicle damages, conjointly helps authorities to take care of roads. Many on-going projects in the field of transport networks are operating in the direction of providing driver with relevant data concerning roads and traffic movements. In secondary Indian roads, one often encounters pot holes which can be either dry or water-filled. Accordingly, to ensure safe driving, it is imperative to detect potholes and estimate their depths in either condition. In this project, we develop a Raspberry Pi-based sensing model, where such detection and depth-estimation can be accomplished using the model, which will discharge the required number of materials which is needed for the detected pothole and to do the levelling process on the discharged material and hence the pothole on the road can be filled completely. In this project we are also providing manual control of Model if the user doesn't want to use the automatic control, then he can monitor using android application which has all control of model applications, like forward, backward, left, right, roll and fill.

Keywords: Raspberry Pi, Automatic Control, Depth Estimation, Android Application.

I. INTRODUCTION

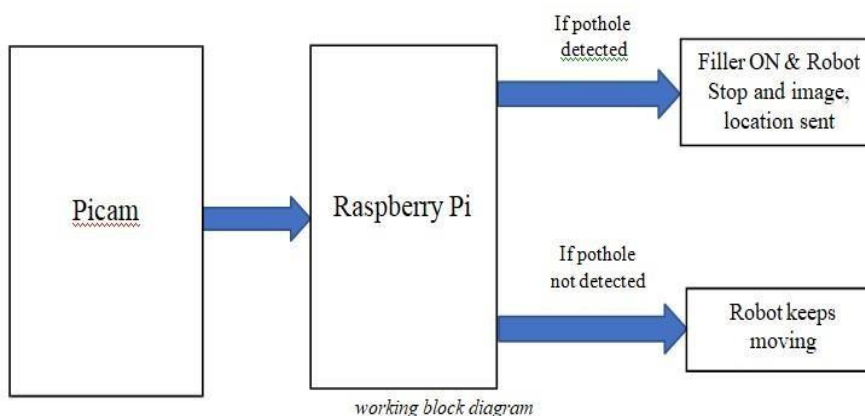
India is the second most populous Country in the World with a fast-growing economy, is known to have a gigantic network of roads. Roads are the dominant means of transportation in India today. However, most of the roads in India are narrow and congested with poor surface quality and road maintenance needs are not satisfactorily met. No matter where you are in India, driving is a breath- holding, multi-mirror involving, potentially life-threatening affair. Over the last two decades, there has been a tremendous increase in the vehicle population. This has increased the number of roads. India has grown tremendously, as more and more people graduate by the minute and more and more of us gain employment by the hour, we are all bound to commute and spend most of our time travelling. According to a survey, 10,727 people were killed in crashes caused by potholes, speed breakers and roads under repairer being constructed. Though fatalities under these categories had come down marginally from 2014, the number of people killed due to potholes rose to 3,416 from 3,049 in the previous years. Evidently the key reason to road accidents happens to be faulty roads and unanticipated occurrence of potholes. The safety of the motorists should be prioritized and a smooth commute should be ensured for everyone. Thinking along such problems, the idea of integrating a hardware system which detects the potholes using raspberry pi and pi cam. In this fast-moving world that we live in, safe commute is not only everyone's priority but also to provide a hassle-free shuttle between places is the government's duty. In this paper, we propose a system which detects potholes on the road. As we all know prevention is better than cure, here we design and implement a system which not only recognizes potholes but also levels these potholes after filling it with the required materials. The proposed system contains two important functions, first is to detect the pothole which is done through pi cam which captures the image and second function which is sending alerts to telegram by sending image and location of the pothole detected. In Bengaluru, the condition of the roads is becoming worse day by day and to improve the conditions of the road, BBMP proposed a request to come up with a solution. So, this project was chosen considering the Bengaluru Road conditions and the request they put up in newspaper. A pothole is a kind of asphalt failure caused by a combination of water and traffic pressure. Due to water in the underlying soil and traffic passing over the affected area structural failure is created in a road surface. Many recognize that quality of local roads may be deteriorating with time, potholes being one of the main causes. Therefore, it is necessary to carry out timely inspection and maintenance of potholes to avoid inconvenience to road users. However, most of the roads in India are narrow and congested with surface quality being poor and road maintenance needs are not

satisfactorily met. Over the last three decades, there has been a tremendous increase in the vehicle population, thereby the pressure on the surface of the road increases which in turn causes breakage of roads. Autonomous cars may require very high-quality specialized maps to operate properly, these maps may be out of date, thereby notification of potholes might not be available in these maps. Therefore, proposing a system by which people can know in real time road conditions in the routes on which they wish to travel and thereby helping people and the society to prevent road accidents through immediate filling of potholes. The motivation for this project is to ensure people are safe and reduce road accidents to a major extent. Over the past few years, there has been a large increase in vehicle population. This increase in vehicle population has led to increasing road accidents and also traffic congestion. These accidents can be due to over speeding, drunk and driving, jumping traffic signals and also due to potholes. Hence it is important to collect information regarding these poor road conditions and distribute the same to other vehicles that in turn help reduce accidents caused due to potholes. Hence, in this system we have proposed a robot that detects the potholes and this information is sent to the concerned authorities. which can be used by the Government to correct these roads effectively. To develop a system based on IOT to detect Potholes and the road which will be uploaded on server and notified to all the user using the application and update as per the condition.

II. METHODOLOGY

Over the past few years, there has been a large increase in vehicle population. This increase in vehicle population has led to increasing road accidents and also traffic congestion. These accidents can be due to over speeding, drunk and driving, jumping traffic signals and also due to potholes. Hence it is important to collect information regarding these poor road conditions and distribute the same to other vehicles that in turn help reduce accidents caused due to potholes. Hence, in this system we have proposed a robot that detects the potholes and this information is sent to the concerned authorities which can be used by the Government to correct these roads effectively. To develop a system based on IOT to detect Potholes and the road which will be uploaded on server and notified to all the user using the application and update as per the condition. This project, we develop a Raspberry Pi-based sensing model, where such detection and depth-estimation can be accomplished using the model, which will discharge the required number of materials which is needed for the detected pothole and to do the levelling process on the discharged material and hence the pothole on the road can be filled completely. In this project we are also providing manual control of Model if the user doesn't want to use the automatic control, then he can monitor using android application which has all control of model applications, like forward, backward, left, right, roll and fill. Initially the robot keeps moving. Once the Pi cam detects and identifies the pothole, the robot stops there and the pothole is fixed. This filler is attached to a DC motor and this is ON only when the pothole is detected. After the pothole is detected, the camera takes an image of the pothole and saves the location. This saved image and location is sent as an alert to telegram. If the potholes are not detected then the robot keeps moving.

III. FLOW CHART



IV. RESULTS AND DISCUSSION

The goal of the Project is, In Indian roads we often come across pot holes which can be either dry or water. So, to ensure safe driving, it is necessary to detect potholes and fill them as soon as possible. A well-maintained

road network is a must for the well-being and the development of any country. So, we have designed an effective road surface monitoring system to:

- To detect the pothole on the road.
- To build an automated robot that fills the pothole with mixture of sand and gravel after the detection.
- To send image and location to the concerned authority.

V. CONCLUSION

Over the past few years, there has been a large increase in vehicle population. This increase in vehicle population has led to increasing road accidents and also traffic congestion. These accidents can be due to over speeding, drunk and driving, jumping traffic signals and also due to potholes. Hence it is important to collect information regarding these poor road conditions and distribute the same to other vehicles that in turn help reduce accidents caused due to potholes. Hence, in this system we have proposed a robot that detects the potholes and this information is sent to the concerned authorities which can be used by the Government to correct these roads effectively. To develop a system based on IOT to detect Potholes and the road which will be uploaded on server and notified to all the user using the application and update as per the condition. In Bengaluru, the condition of the roads is becoming worse day by day and to improve the conditions of the road, BBMP proposed a request to come up with a solution. So, this project was chosen considering the Bengaluru Road conditions and the request they put up in newspaper. A pothole is a kind of asphalt failure caused by a combination of water and traffic pressure. Due to water in the underlying soil and traffic passing over the affected area structural failure is created in a road surface. Many recognize that quality of local roads may be deteriorating with time, potholes being one of the main causes. Therefore, it is necessary to carry out timely inspection and maintenance of potholes to avoid inconvenience to road users. However, most of the roads in India are narrow and congested with surface quality being poor and road maintenance needs are not satisfactorily met. Over the last three decades, there has been a tremendous increase in the vehicle population, thereby the pressure on the surface of the road increases which in turn causes breakage of roads. Autonomous cars may require very high-quality specialized maps to operate properly, these maps may be out of date, thereby notification of potholes might not be available in these maps.

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