

SMART DRONE FOR DETECTING THE POTHOLE

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Abstract— This research discusses a solution to report, record and classify potholes based on factors that influence the destructiveness of the pothole, by using a widely popular platform in the current generation. In the current generation that is being dominated by the mobile computing platform namely smart phones, crowd-sourcing can be achieved in a relatively hassle-free yet effective means of collecting data from a large source-pool, viz, people. The approach used in this project aims to realize the most influential factors related to destructiveness of potholes that are encountered on roadways, while supplementing the data with quality estimates derived from the completeness of the data and certain factors of the input device itself that is involved in the data collection process, thereby addressing the drawback of data reliability.

INTRODUCTION

A Drone or Quadcopter is a Vehicle that has large potential for performing tasks that are dangerous or very costly for humans. One specific type of Drone is becoming increasingly more popular lately: the quadcopter. When visiting large events or parties, professional quadcopters can be seen that are used to capture video for promotional or surveillance purposes. In these situations the quadcopter is usually in free flight. There is no physical contact between the surroundings and the quadcopter and no cooperation between the quadcopters. For example, a group of Drones would be able to efficiently and autonomously search a missing person in a large area by sharing data between. Or, the combined load capacity of a group of quadcopters can be used to deliver medicine in remote areas. In this way a clear interaction between the quadcopters and their surroundings is present. Starting off with position control, additional controller logic can be implemented to counteract the forces imposed by a mass connected to the quadcopter. The choice is made for the Drone, a generalized approach is chosen where possible to encourage reuse of this research's outcome and deliverables.

I. METHOD

The method comprises of basic image of a drone which can capture image and video of the pothole wherever it is present and update in the google maps to know the pothole location where it is present and give prior warning to vehicle drivers to avoid accident happening

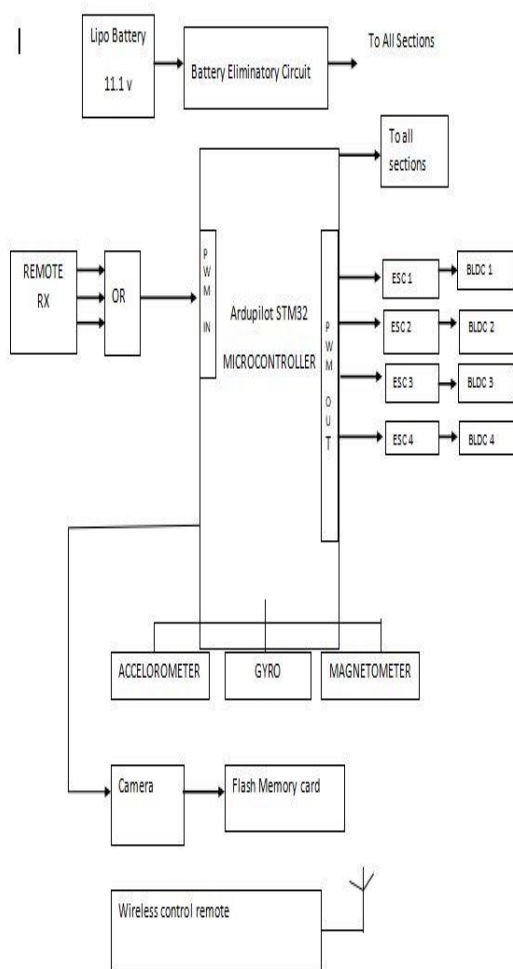


In Fig 1, Basic image of a drone which capture image and videos of a pothole

Multi rotor UAV (unmanned aerial vehicles), namely quadcopters and hexacopters, have become increasingly popular in recent years. The multi rotor technology is becoming more popular and viable for industrial applications as the battery technology used to power the copters becomes lighter, lasts longer and becomes more cost effective. Here we are using our drone to carry some pollution sensors to find out the pollution. Here the main advantage is that it provides the user with a cost-efficient means of determining air quality.

Our sensor focuses on the five components of the Environmental Protection Agency's Air Quality Index: ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrous oxide. This device detects all of these pollutants except sulfur dioxide. The device also includes a town gas sensor to alert the user to gas leaks or the presence of flammable gases. Furthermore, a temperature and humidity sensor is included as these conditions can impact the performance of the gas sensors. **Air pollution sensors** are devices that detect and monitor the presence of air pollution in the surrounding area. Although there are various types of air pollution sensors, and some are specialized in certain aspects, the majority focuses on five components: **ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrous oxide.**

BLOCK DIAGRAM



II. WORKING PRINCIPLE

In this method first, we are making a light weighted material. The device name is Quadcopter. It is a device with an intense mixture of electronics, mechanical and mainly on the principle of aviation. It has 4 motors whose speed of rotation and direction of rotation changes according to user's desire to move device in a particular direction. The rotation of motors changes as per the transmitted signal sent from the 6-Channel transmitter. The signal from microcontroller goes to ESC's which in turn control the speed of motor

Steps involved in assembling drone:

1. [Assembly of the quadcopter frame](#)
2. [Mounting the motors and speed controllers](#)
3. [Mounting the electronics](#)
4. [Flight controller setup](#)
5. [Prop balancing and mounting](#)
6. [Soldering bullet connectors](#)

1.

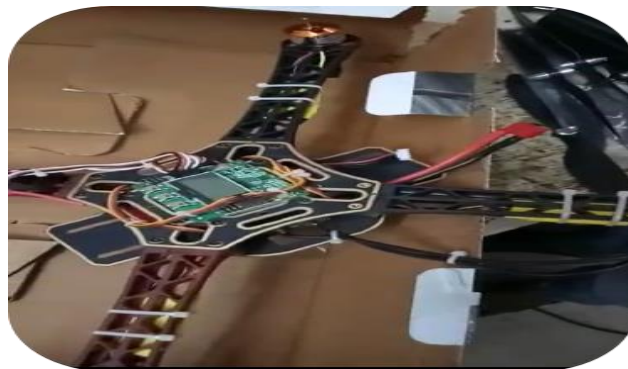


Fig 1: Basic Image of a Drone

2.

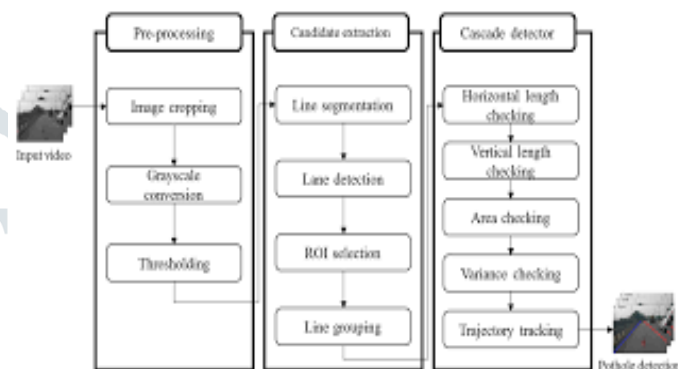


Fig 2: Architectural Design

3.



III. RESULTS

The paper presents a description of making a prototype which can detect pothole from roads and capture images and video of it and updated in google maps and driver who are using the particular vehicle can use this app and find out the pothole presence in roads and be safe by driving vehicle. It can give prior warning about the pothole and speed breaker present in roads and allow vehicle drivers to ride carefully and avoid being accidents.

IV. CONCLUSION

In this paper, The approach used in this project aims to realize the most influential factors related to destructiveness of potholes that are encountered on roadways, while supplementing the data with quality estimates derived from the completeness of the data and certain factors of the input device itself that is involved in the data collection process, thereby addressing the drawback of data reliability.

V. REFERENCES

- [1] Christian Koch, Ioannis Brilakis, "Pothole Detection in Asphalt Pavement Images", Journal Advanced Engineering Informatics Archive, Vol.25, No.3, pp.507-515, 2011
- [2] A.Mednis G. Strazdins, R. Zviedris, G. Kanonirs, L. Selavo, "Real time pothole detection using Android Smartphones with Accelerometers", In Proc.of International Conference on Distributed Computing in Sensor Systems and Workshops, pp.1-6, 2011, 2011.
- [3] Jin Lin, Yuyu Liu, "Potholes Detection Based on SVM in the Pavement Distress Image", In Proc.of International Symposium on Distributed Computing and Applications to Business, Engineering and Science, pp.544-547, 2010

