

Robotic Trash Boat

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Abstract -

In this paper we are launching our project to remove floating debris from an urban sewer pipe, reducing sewage congestion. Cleaning up this urban sewage without the help of hands will save many lives. In this proposed system, an automated robot is used to clean floating debris. Therefore contact with harmful gasses and mosquitoes will be minimized. The system has a PiNoIR camera that can detect garbage on the ground by processing the image and the automatic robot arm will collect floating debris and this will have a cylinder on the boat where the garbage will be stored. Once the trash has been filled the IR sensor will detect it. When the IR sensor automatically removes this information the boat will move to the hub with the help of GPS and garbage will be dumped there. The system will improve significantly as this will collect non-perishable floating waste with the help of image processing

Key Words: Trash, Drainage, Raspberry pi, Python, IOT

1. INTRODUCTION

Water is a basic need for everyone. There is plenty of water in the world but not all water is suitable for human needs. Contamination in the water makes them very dangerous. The dirty water that comes out of our house will contain harmful chemicals. Wastewater comes not only from our homes but also from industry, commercial activities, and other plants. Although cleaning the water with chemicals often causes many respiratory infections. And this water is a big problem for the municipality.

The Urban Drain is a narrow lane near the road or underground. This debris or obstruction from this ditch needs to be cleared so that there is no blockage here. Manual power will not be enough to clean this well. Not only that, hand cleaning will have many problems for people who clean. For these reasons automation plays an important role. Cleaning the drainage by hand is also a difficult task.

2. SYSTEM DESCRIPTION

The robot is made up of ultrasonic sensor, load cell, raspberry pi, servo motor, dc motor. Bluetooth and Lift module used for this application. Ultrasonic sensor. Barrier concept. Lifter is used to remove waste from

water. There is a load cell in the system used to measure the weight of collected waste. A notification is sent to the robot when the garbage collection reaches a constant weight. The DC engine is used to move the robot.

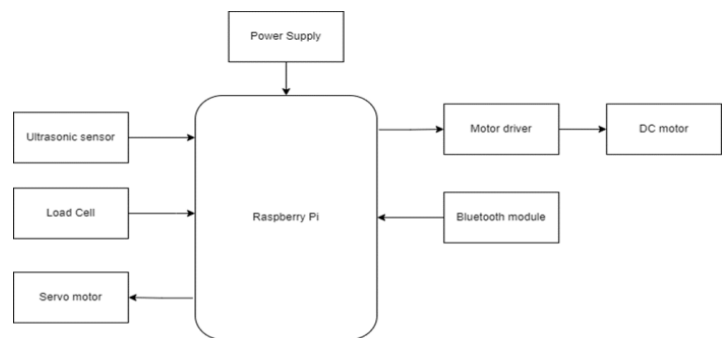


Fig2.1-Block Diagram

3. EXISTING SYSTEM

Existing systems produce only normal sensors to see trash. And these plans do not happen that way the system needs to be fully manually operated on that system. Those previous plans will be stalled. All controls will be provided with external inputs. This system will be the only way to use the chain and plate to collect down the waste.

4. PROPOSED SYSTEM

4.1 Methodology:

In this system the boat is designed and made available for transfer to freshwater streams. The boat will have an Ultrasonic sensor to detect debris on the ground and remove it. As especially on the roads a large floating waste such as bottles, plastic debris will be present when it closes the drainage system. This process continues until the bin fills up after which this will dump the rubbish in the hub.

4.2 Hardware Process

Here is the moment when the Raspberry pi will be organized to find where the floating trash is alone. It then sends an order to the lifter to pick up floating trash here. Once the boat is full the information will be given to GPS and this will go back to Hub. It will dump garbage. Here in this filled bin will be defined the load sensor.

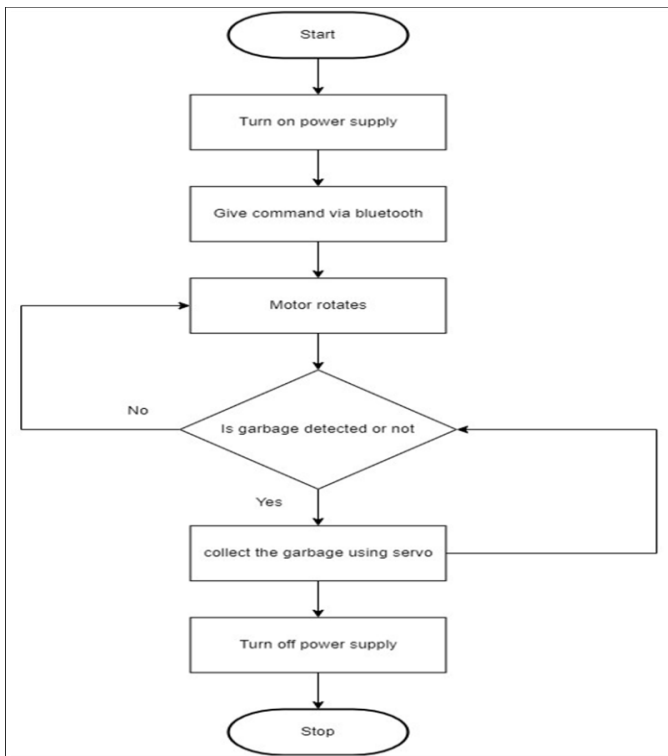


Fig 4.1 Flow Chart

4.3 Software Process

In this software process we make a mobile application to control our robot, instructions will be given to the robot via Bluetooth module .After completing the suggestion we send a notification to the user that the proposal will be full of garbage. By using GPS we can find the location of our robot.

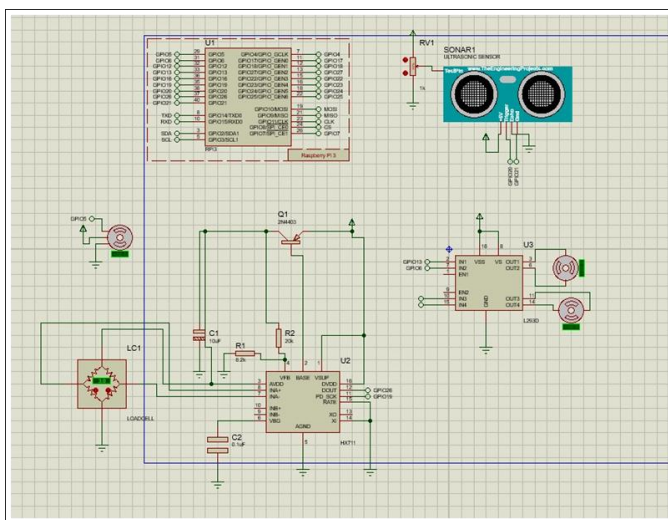


Fig. 4.2 Circuit Diagram

5. RESULT

Floating rubbish is a common problem in urban areas. This waste will clog the area and as a result the flow of water flowing to that area will often flow out. And it is not just that stagnant water will repel large numbers of mosquito larvae. This means that the drainage system will cause serious damage to human health. Therefore, for these important reasons these waste must be removed.

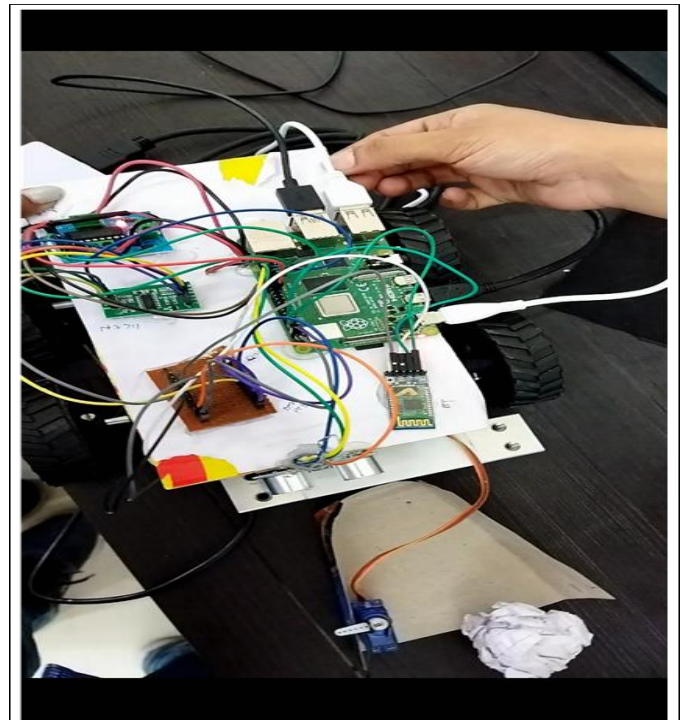


Fig.5.1 Result

A. Equipment setup:

The mechanical system for this is a boat-type system with a garbage can. The arm of the mechanical robot will be there to pick up the floating object.

B. Power supply:

Here the DC battery is used on the ground to drive the whole system. In addition, the solar panel is used for backup batteries.

Advantages:

1. In this floating trash will be collected easily.
2. This robot's drain can be smooth without a blockage.
3. Growth of mosquitoes can be reduced.
4. Pollution due to plastic waste can also be reduced.

Applications:

1. This robot can send any type of drainage's (small, medium ,large).in this floating trash will be collected down easily.
2. This robot's drain can be smooth without a blockage. Growth of mosquitoes can be reduced. Pollution due to plastic waste can also be reduced.

5. CONCLUSIONS

By using this program the manual power will be reduced. Here everything will be done down to automatic operation of the network connection. In this case, the spread of disease will allow for a reduction. Due to the toxic gasses in the trench many workers have died but while using this no problems like these will arise. As this method uses a low level system a suitable floating area will be available. This robotic system is capable of saving time, its portable device. This can be easy to pay for and this consumes less energy. Here the program can be successfully implemented and as a result can be widely used. These types of machines are automatic with advanced technology and in this system it is easy to clean canals from industrial and urban sources. In our country like India this system will be very helpful in cleaning the canals as this can be very effective. Controlling wastewater drainage treated in this way will help to irrigate crops, clean toilets. This robotic system will be very useful in rainy seasons as water will be easily blocked for those reasons.

Future scope:

In India, sewers are open. So many people waste their plastic such as plastic bottles, plastic lids and many non-perishable waste. This project will be very helpful to clean up these Ares. In the future this will be used to clean up all the lakes. This project helps to cleanse our nation and keep us healthy.

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