POND CLEANING ROBOT

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Abstract:- *This paper explains India is holey country. There is lots of water pollution of Godavari River at Nashik. The water pollution is very important problem in rivers, ponds and water bodies near Godavari River at Nashik. Due to increase in water pollution in the form to waste debris; it is hampering the life of aquatic animal and make their life in danger. Similarly sometimes the aquatic animal tends to eats surface waste debris considering it as a food; which ultimately cause the death of animals. Due to polluted water is are many skin diseases to human kind are observed. So that to reduce the water pollution we are trying to make pond cleaning robot."Pond Cleaning Robot'' a device which involves the removing the waste debris from water surface and safely dispose from the water body. The pond cleaning robot works on Bluetooth to extract waste water debris, plastics & garbage from Godavari River at Nashik.*

***Key Words*: Arduino UNO, Bluetooth module, DC motor, Motor driver etc.**

1. INTRODUCTION

The "Pond cleaning robot" used in that places where there is waste debris in the water body which are to be removed. This machine is consists of cleaner mechanism which collect & remove the wastage, garbage& from water bodies. This also reduce the difficulties which we face when collection of debris take place. A machine will lift the waste surface debris from the water bodies, this will ultimately result in reduction of water pollution and lastly the aquatic animal's death to these problems will be reduced. It consists of Belt drive mechanism which lifts the debris from the water. The use of this project will be made in rivers, ponds, lakes and other water bodies for to clean the surface water debris from bodies. Similarly they are lots of problems of water pollution under Godavari River, Nasik which affect the acoustic, human life & beauty of Godavari River.. Waste water is defined as the flow of used water from homes, business industries, commercial activities and institutions which are subjected to the treatment plants by a carefully designed and engineered network of pipes. The biggest impact of cleaning the chemical wastes can cause respiratory diseases and it plays a challenging issue for the municipality officers Water damage is classified as three types of contaminated water. They are clean water, gray water and black water. Clean water is from a broken water supply line or leaking faucet. If not treated quickly, this water can turn into black water or gray water, depending on length of time, temperature, and contact with surrounding contaminants. Drainage pipes are used for the disposal of sewage and unfortunately sometimes there may be loss of human life while cleaning the blockages in the drainage pipes. The municipality workers are only responsible to ensure that the sewage is clean or not. Though they clean the ditches at the side of buildings, they can't clean in very wide sewages. The municipality workers need to get down into the sewage sludge to clean the wide sewage. It affects their health badly and also causes skin allergies

2. RELATED WORK

2.1 M. Mohammed Idris [1]

In the proposed system, the machine is operated with remote control to clean the sewage. The system has a wiper motor that starts running as soon as the set-up is switched on. Two power window motors are connected to the wheel and it is driven with the help of the remote control set-up. The process starts collecting the sewage wastes by using the arm and it throws back the waste into the bin fixed in the machine at the bottom. An arm is used to lift the sewage and in turn a bucket is used to collect them. The set-up runs even in sewage area with water (limited to a particular amount) so that the wastages which floats on the water surface also gets collected.

2.2 Mr. Abhijeet.M. Ballade [2]

The proposed system explains that, Due to increase in water pollution in the form to waste debris; it is hampering the life of aquatic animal and make their life in danger. So that to reduce the water pollution we are trying to make river cleanup machine."River cleanup machine'' a machine which involves the removing the waste debris from water surface and safely dispose from the water body. The river cleanup machine works on hydropower to extract waste water debris, plastics & garbage from water.

2.3 Mr. P. M. Sirsat [3]

This paper emphasis on design and fabrication details of the river waste cleaning machine. This machine has designed to clean river water surface. The remote operated river cleaning machine has designed which helps in river surface cleaning effectively, efficiently and eco-friendly. The "River waste cleaning machine" is used where there is waste

debris in the water body which are to be removed. This machine consists of DC motors, RF transmitter and receiver, propeller, PVC pipes and chain drive with the conveyor attached to it for collecting wastage, garbage & plastic wastages from water bodies.

3. HARDWARE REQUIREMENTS

- Arduino UNO.
- L293D Motor Driver or H-Bridge.
- DC Motor.
- Bluetooth module.

4. SOFTWARE REQUIREMENTS

- Arduino IDE.
- Proteus.

5. PROPOSED DESIGN

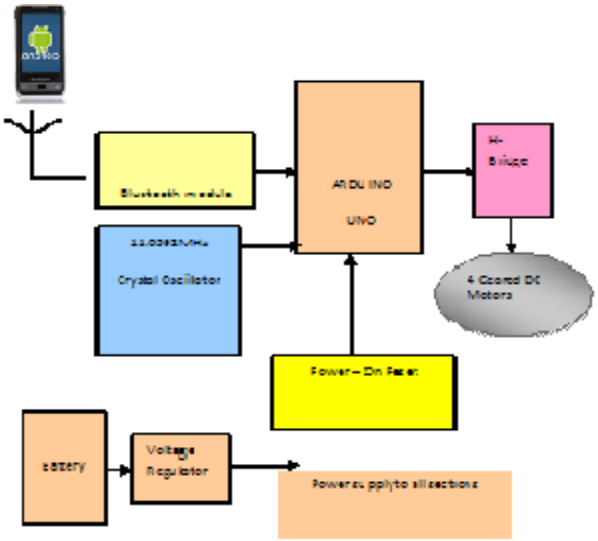

Fig -1: Block Diagram

Here we have used a Bluetooth module to control the robot via 2 DC motors at 300RPMappox. The robot is control by an android phone application Microcontroller used is AT89S51 from 8051 family to work in a serial communication UART mode the communication is configured on 9800bps to communicate it with the Bluetooth module. The Bluetooth module used is a HC-05 in smd package which works on a 3.3v and have a serial communication with any device connected to it the communication speed can be configured on various speed via AT Command. The BT module is a SPP supported profile so it can be connected easily to any module or phone. In this profile the data can be sent and receive to module. The BT module is connected to the RX pin of microcontroller. The L293D is a motor driver IC to operate the motors in any direction required dependent on the logic applied to the logic pins. The controlling devices of the whole system are a microcontroller. Bluetooth module, DC motors are interfaced to the microcontroller. The data receive by the Bluetooth module from android smart phone is fed as input to the controller. The controller acts accordingly on the DC motor of the robot. The robot in the project can be made to move in all the four directions using the android phone. The direction of the robot is indicators using LED indicators of the Robot system. In achieving the task the controller is loaded with program written using Embedded 'C' Languages.

6. SYSTEM FLOW CHART

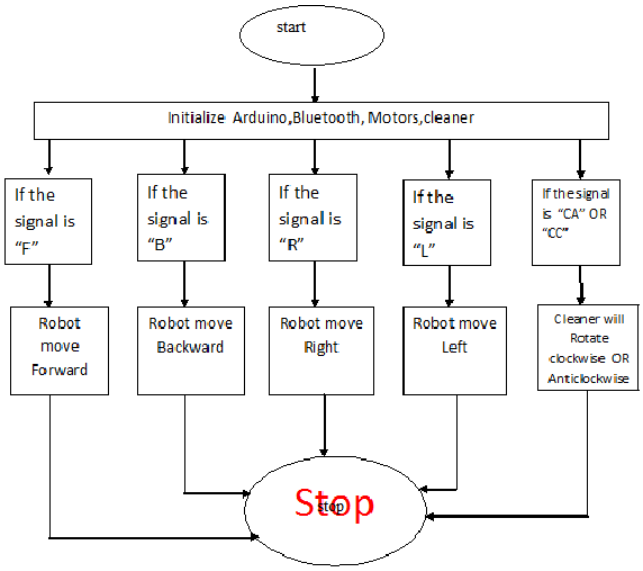

Fig -2: System flow chart

7. EXPERIMENTAL SETUP

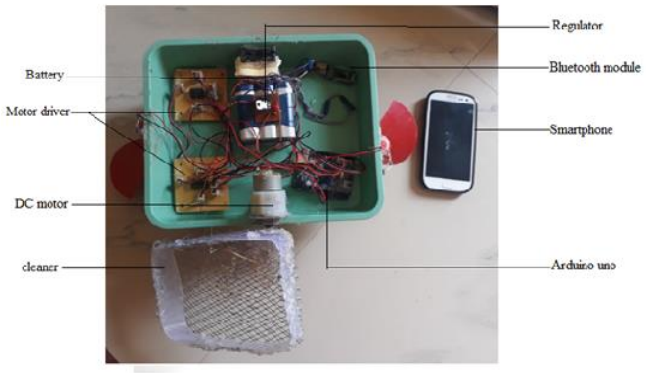

Fig -3: Experimental Setup

8. RESULTS

The result of the complete system is given below with step by step process:

Step 1: Turn ON the power supply. After that aall the components gets activated.

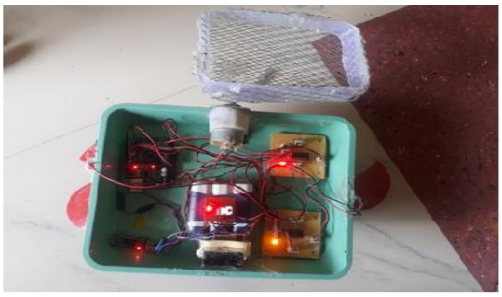

Fig -4: Components gets activated

Step 2: In this step Bluetooth module is opened and try to scan the device is as shown in figure 5.

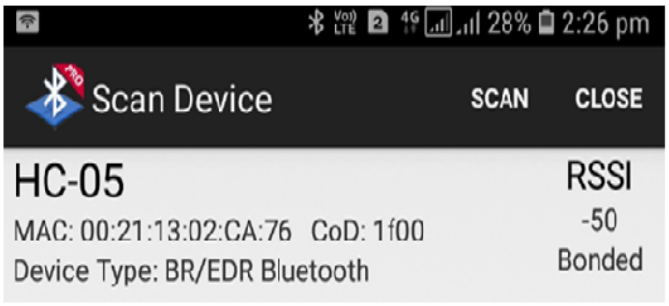

Fig -5: Bluetooth app is opened

Step 3: In this step device gets connected with the Bluetooth. By opening this service UUID came on the screen.

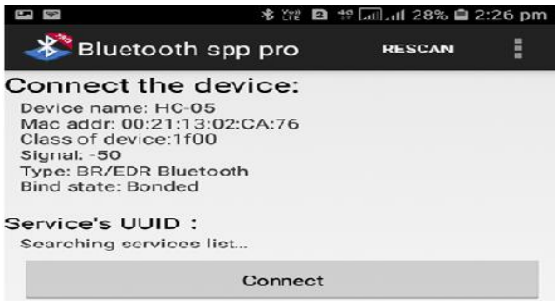

Fig -6: Device gets connected with the Bluetooth.

Step 4: After connection of the device it should select the communication mode.

Fig -7: Select communication mode.

Step 5: Once the byte stream mode is selected, it shows the keypad on the screen to give command. And we type forward to move the device forward.

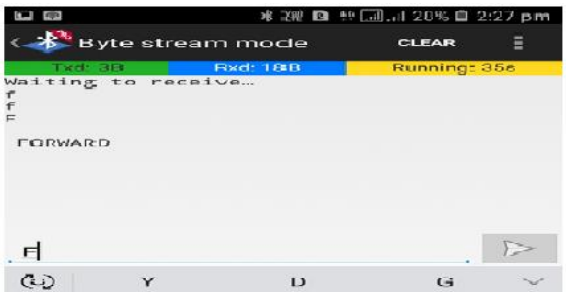

Fig -8: Type forward direction

Step 6: after checking the forward direction we moved on to check the backward direction. Then give the command as backward then robot will move backward.

Fig -9 : Type backward direction.

Step 7: if we want to stop the device by moving, we can type 's' . By using this command we can stop the device.

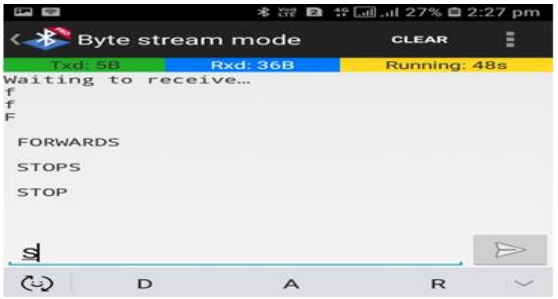

Fig -10: stop the device

Step 8: : after stopping the device we it start again to collect the garbage at the right side. For that 'R' is given as a command.

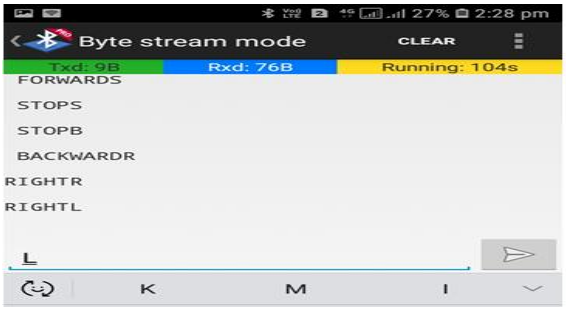

Fig -11: Giving command as 'R'.

Step 9:To collect the garbage at the left side we have to give the command to the device as 'L'. Then the robot will move left and collects the garbage.

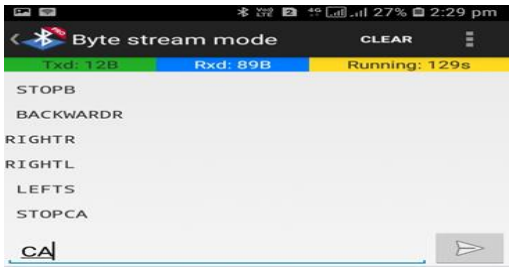

Fig -12: Giving command as 'CA' to cleaner to rotate anticlockwise.

Step 10: The garbage is collected when we give command as 'CA' to the device. Than the cleaner will collect the garbage in anticlockwise direction.

9. ADVANTAGES

Man power is reduced due to automated self-service.

1. It is a non conventional and eco friendly system.
2. Since it is easy in operation skilled workers are not required.
3. Its maintenance cost is low. And the main advantage of this is it does not need much human intervention.

10. CONCLUSION

The problem of water logging due to plastic, papers and metal leads to pest growth and it favors diseases like malaria, typhoid etc. This is unsafe for human life. The proposed system cleans the garbage present in small and big lake and minimizes the use of fuel operated garbage collector. It also saves the life of aquatic animal and reduces human efforts required to clean the lake.

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