Water Trash Collector

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Abstract:- Water is essential to life, yet water pollution is one of the most serious environmental threats that we face today. Our lakes and river are increasingly getting polluted. The innovative system that we propose offers a unique and automated way to tackle water pollution by eliminating manual labour thus increasing efficiency and decreasing the cost and time needed. The main aim of this floating waste collector project is to clean the waste that gets accumulated on the surface of water bodies thus keeping the water clean hence decreasing pollution. In this project we are going to use Arduino and Android software to model and build Arduino Circuit for our water collector bot. It will collect the waste from the surface of water and push it towards the land around it. With the use of DC motors, the bot and collectors will have to & fro movement.

I. INTRODUCTION

From medical to space study, the work of the Internet of Things and robotics is done. There are improvements in technology, but not in water purification. Cleaning water bodies can be done with the use of robotics and IOT. Many benefits are brought to the field by the water cleaning tasks. By integrating Wi-Fi module with microcontroller like Arduino, we can create devices which can be operated with unlimited range. The cost and complexity of the device can be reduced with the use of IOT components.

II. EXISTING SYSTEM

The invention of a metallic waste collection robot was made. Human should show up at the water body to clean it. Some devices have features like solar panels and DC pump. The research design has a conveyer belt to collect the waste and a pedal operated boat with propellers attached to the shaft.

A. Drawbacks:
➢ Operator has to present at the site.
➢ Short range due to the use of radio waves.
➢ Existing system has limited trash collection capacity.

B. Proposed System
The proposed system uses dual propeller mechanism and Android app (Blynk app). The use of dual motors navigation system makes it easier to control the device and does not require regular maintenance. The device has an L298N motor driver and a Node-MCU which help to control the motors via the Android app. This device helps in removing floating trash with ease and does not require much manual support. In this design Mi camera has been installed to operate the device by observing in mobile and human can operate the device from anywhere.

C. Advantages
➢ Operator need not be present at the site.
➢ Longer range due to the use of telemetric devices.
➢ It can be operated using an android app.
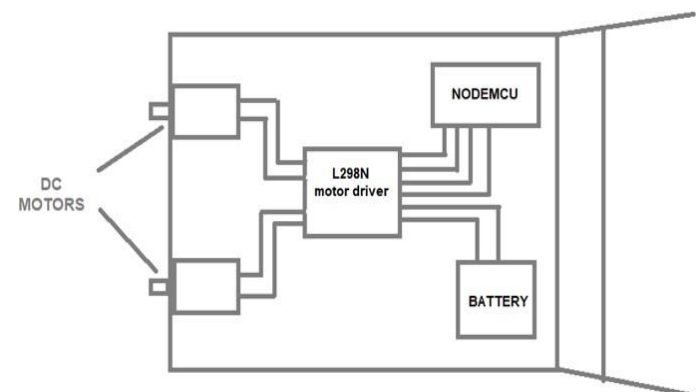➢ It has live stream option, so user can operate the device from any location.

Fig 1. Architecture of the Bot

III. EXPERIMENTAL TOOLS

A. Motor Driver IC L298D
The L298N is a monolithic integrated circuit in a multi-watt, 15-pin, PowerSO20 package. It is a high voltage, high current dual full bridge driver designed for standard TTL logic levels and inductive loads such as relays, solenoids, DC and stepper motors. Two enable inputs are available to enable or disable the device regardless of the input signals. The emitters of the bottom transistors of each bridge are tied together and the corresponding external terminal can be used to connect an external sense resistor. An additional supply input is provided so that the logic works with a lower voltage.

B. Two DC motor
A DC motor belongs to a class of rotary electric motors that convert DC electrical energy into mechanical energy. The most common types are based on the forces generated by magnetic fields. Almost all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current in some part of the motor.

C. Node MCU

There are open source board designs that are available. The name "NodeMCU" combines "node" and "MCU" (micro-controller unit).The term "NodeMCU" strictly speaking refers to the firmware rather than the associated development kits.Both the firmware and prototyping board designs are open source.The firmware uses the Lua scripting language. The firmware is based on the eLua project, and built on the Espressif Non-OS SDK for ESP8266. There are many open source projects that it uses. Users need to select modules that are relevant to their project in order to build a custom firmware. Support for the 32-bit ESP32 has also been implemented.

D. Batteries

A battery is a device consisting of one or more cells with a connection to the outside world. The positive and negative terminals of a battery are used to supply electric power. electrons will flow through an external electric circuit to the positive terminal from the terminal marked negative When a battery is connected to an external electric load, a redox reaction converts high-energy reactants to lower-energy products, and the free-energy difference is delivered to the external circuit as electrical energy.

E. MI Camera

The Mi Home Security Camera 360° is a 2-megapixel camera with an f/2.1 aperture. In well-lit environments, be it indoors or outdoors, the camera captured an ample amount of light in our tests, which means that videos retained a decent amount of colour and looked clear.
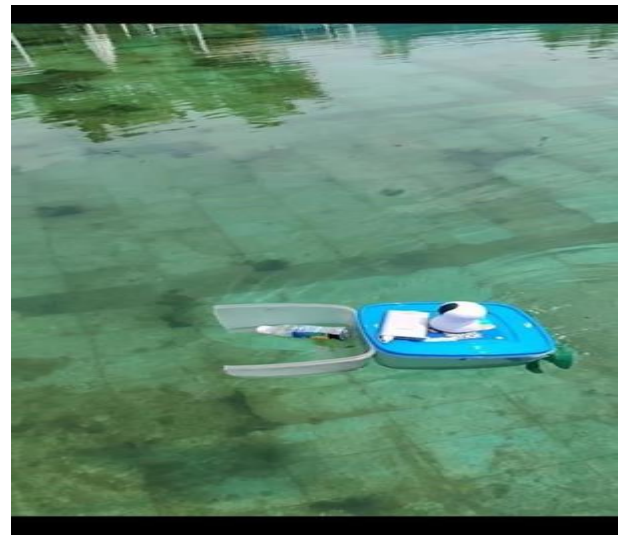
F. Blynk

Blynk is an internet of things platform that can be used to control devices on the internet. A graphical interface or human machine interface can be created with the help of this application.

IV. OUTPUT

(Fig.1 Bot collecting trash)
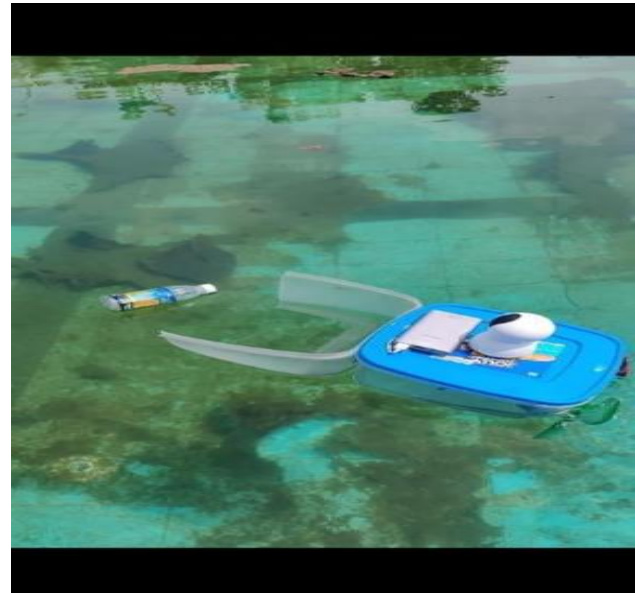
(Fig. 2 Bot collecting trash)

(Fig.3 Bot collecting trash)

(Fig. 4 Blynk app to control bot)

(Fig. 5 Surveillance from MI cam)

V. CONCLUSION

A rover platform is designed, built and programmed for cleaning water. It is controlled by user by using an app and a camera on the top. This helps the user determine any waste floating on water. Video transmission and rover controlling is done using WI-FI and hence the range will be longer than traditional Bluetooth module. This will ensure that the user can operate the rover from a 150 feet radius.

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