

Solar powered water skimming robot with remote control Access

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Abstract: As we likely know about all the water bodies are polluted and they are used for releasing untreated sewages and strong waste. Most of the waste is unloaded in the lake, stream of other water resources. The rubbish which are arranged in the water bodies like lakes, streams, in light of which the water get dirtied which we can't use that water for our daily use and the water will similarly get wasted. To vanquish this issue, we have arranged a skimming robot to assemble the refuse which are gliding on water. This assignment is similarly successful and work on the sun-based energy, no external force supply is required. A battery of 12v is utilized to store the energy which accumulated by the sun-based plate, by then this battery will use this set away energy to work all out boat. The essential mark of this thought is to diminish labour and time use for cleaning the stream. This paper proposes such modest framework. It utilizes customized android application, microcontroller (NodeMCU-ESP8266) and a hand-off leading body of 2 yield channels, the orders are encoded by the application and it imparts the control sign to the hand-off board through microcontroller. At long last, the framework is associated with a Wi-Fi network which makes the framework as Internet of Things (IoT) The machine is generally a boat sort of thing which will glide on the water body to gather the light and skimming waste present in the water

Keywords: water skimming robot, trash collector, Remote control robot, eco-friendly robot, Wi-Fi module, Node MCU(ESP8266)

INTRODUCTION

Clean water is a fundamental necessity for each living being. however, water tainting is the most certifiable natural perils that we face today. Our lakes and stream are logically getting contaminated. Pivoting the effect of water defilement is amazingly inconvenient and can require quite a while to dispense with every one of the dangerous substances from the water. Moreover, a more noteworthy number of work and monetary arrangement would be expected to clean something similar. Rubbish is a huge issue generally speaking thought. This issue is seen by the affiliations that assists with fixing this issue, similar to Ocean Conservancy, this is a non-advantage environmental affiliation which is arranged in Washington, D.C., United States. The affiliation gives a record in 2013, that over the span of ongoing years, almost 9.5 million volunteers have taken out nearly 165 million pounds of waste from more than 330,000 miles of coastline and streams in 153 countries and regions. They have likewise expressed that, at present more than 10 million pounds of garbage along very nearly 20,000 miles of coastlines were gathered by more than 5lakhs people.

The innovative system that we propose offers an amazing and robotized way to deal with handle water tainting by discarding actual work likewise growing capability and diminishing the cost and time required. The central mark of this skimming waste task is to gather the waste which coasts on water bodies likewise keeping the water clean consequently diminishing pollution. This undertaking being far off worked is constrained by our advanced cell. we use DC engines to anticipate the bearings. To make the boat self-sensible we have coordinated Solar sheets which would charge the battery. Wire measure net is used for garbage assortment.

SOFTWARE

The android application is created by utilizing the open-source stage called MIT App Inventor. MIT App innovator is a web application coordinated improvement climate, at first gave by Google, and now kept up by the Massachusetts Institute of Technology (MIT). It grants rookies to PC programming to make application software(apps) for two working frameworks (OS): Android (working framework) |Android, and iOS, it is free and open-source programming released under Multi-approving. It uses a graphical UI (GUI) generally equivalent to the programming language Scratch (programming language) and the Star Logo, which licenses customers to move visual articles to make an application that can run on cells. In making App Inventor, Google drew upon basic before research in enlightening handling, and work done inside Google on online improvement conditions.



SI.No	Button pressed	Operation
1.	Forward button	Moves forward
2.	Left button	Moves left
3.	Right button	Moves right
4.	Backward button	Moves back
5.	No button pressed	Stop / stand still

Table 1. operation of mobile application

Fig .1 Mobile application interface

DATABASE

A continuous information base is one that stores information and brings information from it rapidly. A Realtime Database is a cloud-supported educational record. Information is dealt with as JSON plan and synchronized consistently to each associated customer. Precisely when you make cross-stage applications with IOS, Android, and JavaScript SDKs, most of your clients' benefit depends upon one Realtime Database case and henceforth getting refreshes with the most current information. The verification includes in firebase let the approved client to get to their application. Firebase gives login through Gmail, GitHub, Twitter, Facebook and additionally allows the expert to make custom endorsement. Data set in firebase is a cloud-based educational assortment and needn't sit around idly with SQL-based requests to store and get information. The information base is fundamentally solid since it keeps the information even the association is lost.

METHODOLOGY

The sun beam's occurrence on sun-oriented boards and it changes light energy over to electrical energy. This produced energy is put away into the battery, the stockpile is taken from battery to all gadgets and electrical gadgets. The microcontroller is customized to provide orders to change the movement of the boat, pivot of transport line and so on This boat will absolutely work by sunlight-based energy so no outside power supply is required. The Wi-Fi module is associated with the microcontroller and can be worked by utilizing a User Defined portable application i.e., Wi-Fi regulator application. The four engines will work as it gets the order from Microcontroller.

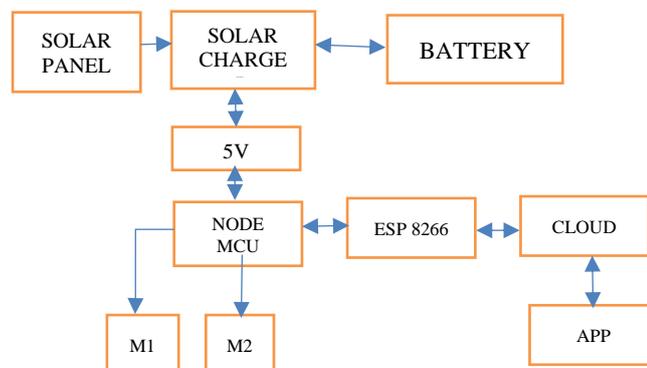


Fig. 1. System architecture

The Wi-Fi is utilized to work in a wide reach up to 50m. A Float is utilized to adjust the pack. This unit is likewise intended to clean oil slick in water for that water and oil separator is utilized to isolate oil from water. The ultrasonic sensors will distinguish the impediments utilizing communicating and getting signals which impart this sign to Microcontroller. Microcontroller provides order to engines and afterward to transport and propeller. At that point the

transport will begin turning which will gather the trash through water. The transport line will move the trash to the trash can. The compartment additionally comprises of an ultrasonic sensor which will detect the degree of trash. As the trash increments past the level, it will give a sign to Microcontroller which will provide order to engines to quit gathering the trash by transport line. The reserve season of the battery is 2-3 hours around evening time. We can build the working hours according to our necessity by expanding the size of battery

OPERATION

The portable application is associated with the google firebase through the IP address to convey the signs between the microcontroller and the versatile application. At the point when the forward button is squeezed the condition of the relay1 and relay2 will be changed to high and the robot will push ahead. in the event that the forward button is delivered the condition of the relay1&relay2 will be changed to low, because of this the robot will quit moving.

At the point when the left catch is squeezed the condition of the relay1 will be changed to high and the condition of the relay2 will be changed to low, because of this the robot will turn towards left. At the point when the correct catch is squeezed the condition of the relay1 will be changed to low and the condition of the relay2 will be changed to high, because of this the robot will turn towards right. A cross section type compartment is fixed before the robot. At the point when the robot moves the garbage will be caught inside the cross-section type holder, when the compartment is loaded up with rubbish it tends to be taken out from the robot and fixed again after the evacuation of that junk.

ADVANTAGES

- No skilled person needed.
- Eco-friendly robot.
- Easy to operate and understand the work flow.
- Less man power is needed.
- Low investment needed.
- Remote controlled.

FUTURE WORK

Hence the proposed system works as predicted and in future it can be updated. Now our robot can be remotely operated up to 50m, it can only collect 2.6kg of trash at single run and it is not easy to operate our robot in running water. Considering the above reasons as a disadvantage it can be over come by replacing the Wi-Fi module with RF transmitter and RF receiver, to increase the trash collection capacity the size of the floater and wire mesh can be increased. Finally, to make our robot to run in running water the dc motor can be replaced with relevant propeller system.

CONCLUSION

The robot proposed in this paper is powerful in time-wise and cost-wise and it is Simple to manage, and straightforward the working fundamentals of the robot. It needn't bother with powers like oil or diesel to work, contamination factor is furthermore lessened. The Endeavor is arranged with the view that it ought to be a great deal of reasonable, viable and steady to stream and lake cleaning.

The issues were perceived and thought with the assistance of the data assembled during the examination and applying the fundamental data on planning for vanquishing the issue. Finally, we have thought of a robot with an organized direct part. It is a non-regular waste cleaning robot. by utilizing this robot the debased water bodies can be cleaned with insignificant measure of man just as monetary force. To make our task eco-accommodating there is no use of fills like oil and diesel can be saved because of battery worked

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