WATER GARBAGE COLLECTOR USING ANDROID

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ABSTRACT

Water is one of the most important things to our life but pollution is one of the most dangerous problem in nature. lakes, pools and rivers get polluted to reduce pollution huge man power and money is required. floating objects will pollute waterbodies. to choose this topic we are motivated by an article on river Yamuna one of the biggest rivers in India which is polluted due to these types of floating objects. Our project "Water Garbage Collector Using Android" aim to tackle the pollution by reducing man power thus increasing its efficiency and the cost of the system will be cheap and less time will be required. our project mainly aims to collect garbage which float on water bodies to keep the water clean. First system turned on Nodemcu start Wi-Fi signal which is detected in android phone when we connect to that Wi-Fi network application that we made will get ip address. application has remote from which we can control the boat and give the direction to the boat. solar panel is used to make system non-conventional. Ultrasonic sensor checks the bin level and if its full then it will give beep sound to return the boat.

Keywords: IOT, Arduino, Ultrasonic Sensor, WIFI Module, Water Garbage Collector, Android App.

I.   INTRODUCTION

Saving water from the pollution is our duty. 70% of earth is surrounded by water and water is getting polluted by us [1]. As every individual depends on water for livelihood, we must learn how to keep our limited supply of water pure and away from pollution. Keeping our waste supply safe and pure will protect the water for the generation to come. humans are not the only species on earth that requires water for survival in fact, every species on this planet need water to leave and survive. Without water, the aquatic life will stand no chance of survival. It is highly important that we safe water that is essential to our sustainability.

Garbage is the one of the biggest problems not only in cities but also in the rural areas of entire India [2]. It is a major source of pollution. India cities individually produce solid waste in million tons per year. Supreme court of the India directed all cities in the country to implement a waste management programmed but these directions have simply been ignored... it is not wrong to say that India is on verge of garbage crisis even though 9000 crore rupees are allotted for the Swachh Bharath Abhiyan. Water is one of the most essential elements to our life but water pollution is one of the serious problems in our nature. Our lakes and rivers get polluted, to overcome this pollution may require huge man power and money [3]. In normal mode people get inside water collect garbage and ring them near shore using boat but what if water contain chemical from which this people won't ready to enter the water body at that time this type of device will may get proper permission and proper importance. Water garbage collector using android is device which float on water and collector that garbage which is floating in the water bodies. Android device is used to give the direction to the system so it can easily collect the garbage from water a wire gauge is used to collect garbage the main reason to use this because water will pass through gauge but garbage will be struck within it. The device will work on water bodies like ponds, swimming pool, lake etc., and it can also use in dam when the doors are closed. If the water flows from the bottom of dam, then the garbage will be floating on the top of water body for those type of dam, we can use this system.

II.   MOTIVATION

Main motivation to choose this project is when we went through one of article upon the polluted river Narmada. River Narmada is one of the holy rivers and longest river which has so much amount of floating object. these

objects are polluting the river so badly. Each end every waste material floating object and industrial effluents are dumped into this river. Below figure is pictorial proof of the river Narmada

Figure 1. River Narmada

III.   METHODOLOGY

Water garbage collector using Android here ultrasonic sensors, motor and small dust bin is connected along with kit. Nodemcu which is the Wi-Fi module gives the Wi-Fi which is used as the mediator between application and Arduino uno. when button is pressed Nodemcu receive the message, which transfer the function to Arduino uno which transfer the function to motor shield and motor shield run the function.
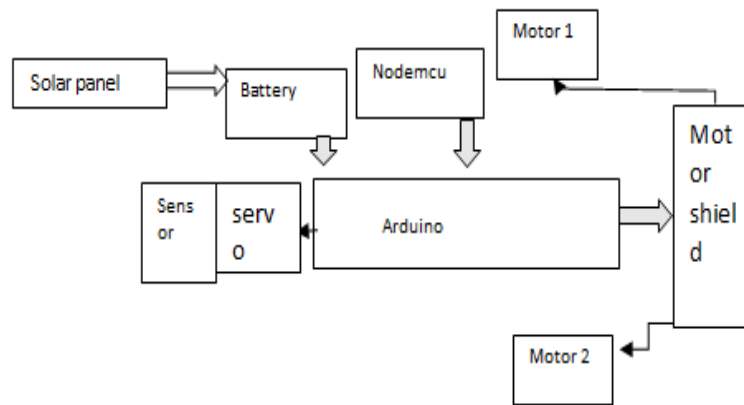

Figure 2. Block diagram

The proposed system is fully automated hence time and human work are saved. Here we have used 2 different connection one is Arduino uno connection which is used to run the boat and second one is Arduino nano connection which is used to detect garbage level in water.

IV.   WORKING PRINCIPLE

A. COMPONENTS USED

Arduino uno which is main functional kit which take input from Nodemcu and send to motor shield. we have used Nodemcu as Wi-Fi module which connect hardware and software and transfer data received from application to the Arduino uno.
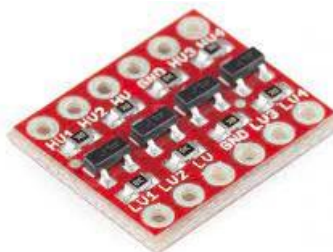

Figure 3. logic level converter

Logic level converter is placed and Arduino uno, Nodemcu and motor shield is connected with logic level converter the main purpose of the converter is to shift the level. the example I can give is we know that Nodemcu take input as 3.3v and Arduino take 5v input if I connect directly without converter and if I send any code from Nodemcu to Arduino it moves as 3.3v but Arduino only take 5v if it gets 3.3v it will consider as 0v to resolve this problem we are using logic level converter.

Figure 4. Lm2596 dc-dc Buk converter

Buk converter is connected to solar panel. main purpose of Buk converter is to reduce the voltage from solar panel to battery. We are using power bank as battery and it take only 4.4v input and the solar panel which produce voltage up to 6 v which can damage the power bank so Buk converter will help there.

B. ANDROID APPLICATION

From android studio we have create one application in which we have given remote mode and one auto button. whenever any button is pressed particular code will be sent to Nodemcu via Wi-Fi as mobile phone is connected with Wi-Fi. Auto button is the automatic mode button in which the system itself moves and if any obstacle comes it check left and right direction to a particular angle and which place is free that side boat will rotate and move forward.
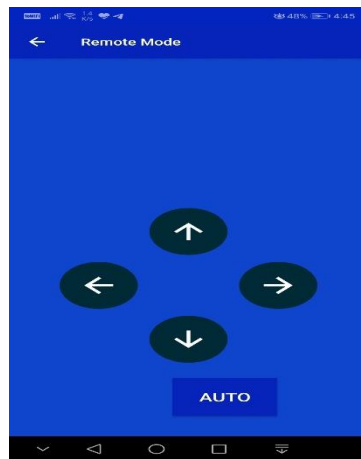

Figure 5. application

C. OBJECTIVES AND APPLICATION

Previously the paper [1] has been developed in which they have used conveyer belt this belt is sticky and costly and in particular angle only it will lift the object which require so much energy. Our project aims to reduce installation and maintenance cost and here we don't require huge man power only one person can easily handle if he we teach him once and unskilled labor can also work as the system is simple. as we have used Wi-Fi module can be runned for long distance to collect of floating object
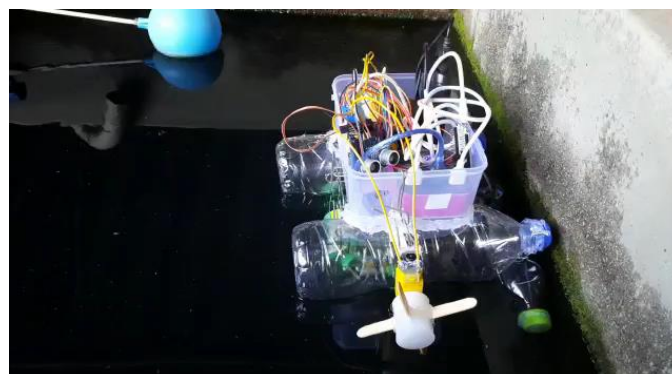
V. RESULTS

Figure 6. side view of boat

Figure 6 shows the side view of boat how the boat is designed and it will change the normal method as it is controlled by the android application.

Figure 7. working view and top view

In the figure 7 we can see how the boat move and solar panel is kept over the body. In front we can see one ultrasonic sensor which detect the obstacle when the system is in automatic mode. Another sensor is kept downside which detect garbage level when garbage is full it gives beep sound. we know that garbage pass Infront of ultrasonic sensor but in our code, we made if the garbage is Infront of sensor within particular distance for particular time then only it should beep.

VI.   CONCLUSION

Our project water garbage collector using android will help to clean the water bodies by collecting floating objects from the water and sensors will help to detect garbage level and Wi-Fi will help to connect software and hardware from which we can run the system for a long range

VII.   REFERENCES

[1]   Apoorva S, Chaitanya, Rukuma S. Prabhu, Sai Swaroop B. Shetty, Danita D'Souza "Autonomous Garbage Collector Robot" International Journal of Internet of Things 2017, 6(2): 40-42 DOI: 10.5923/j.ijit.20170602.06

[2]   Madhavi Wagh, Kashinath Munde "Design and Analysis of River Water Cleaning Machine" IJSDR1807049 International Journal of Scientific Development and Research (IJSDR) July 2018 IJSDR | Volume 3, Issue 7

[3]   Ketan H. Pakhmode, Ronit R. Dudhe, Gangadhar S. Waghmare, Daniyal A. Kamble, Kirti Dhenge," SOLAR POWERD WATER SURFACE GARBAGE COLLECTING BOAT" International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 p-ISSN: 2395-0072 Volume: 06 Issue: 03 | Mar 2019.