Solar Powered Floating Water Trash Removal Boat

Viki Tayade[1], Prabhat Dodmise[2], Sagar gawade[3], Shital Gawade[4], Nazish Fatima[5]
[1,2,3,4]*Student, Department of Electronics and Telecommunication, Keystone School of Engineering Pune*
[5]*Assistant Professor, Department of Electronics and Telecommunication Engineering, Keystone School of Engineering college, Pune, Maharashtra, India*

Abstract **- The aim of this project is to focuses on "SOLAR POWERED FLOATING WATER TRASH REMOVAL BOT". In India water pollution is increasing day by day so this is becoming significant issue for rivers, ponds etc. This mainly accommodates impurities like waste in water debris, plastics, garbage on floating water surface. These pollutants may affect on health of individual and also affect on lifetime of aquatic animals. This Project depends on sustainable power sources, so there's decrease being employed of non-sustainable power sources like oil, petroleum, electricity and everyone kind of mineral sources. So, using solar may help saving energy. So, this project will help to reduce the water pollution on due to floating bodies.**

Index Terms **- water debris, aquatic animals, pollution, Garbage, Pollutants.**

I.INTRODUCTION

The wastewater management is become major issue nowadays. Water is the main asset for the living things and clean water is the basic need. But nowadays we see the water ponds, river or cannel is get polluted by the human's waste. Usually seen in densely populated country like India is that common waste like plastic bottles, covers and other plastic scrap left on the streets and in the open drainage. Our project help to reduce water pollution and clean the water, which can be very useful for the living things. In India there is need of automated machine which can clean trash and collect this solid waste. Currently these drains are cleared with the help of manual workers where the workers have to get into drains and manually remove the waste. These workers suffered by the various diseases which affect their life and reduce their immunity. The projects use solar power, which is free of cost. The boat gets charged from absorbing solar energy and then stores it into the battery. The solar energy gathered will be used to run the complete functions of the boat to remove the trash from the water

II. LITERATURE SURVEY

A. Design & Fabrication of Automatic Drainage Cleaning System using Solar Panel.
Author Mragank Sharma, Shahbaz Siddiqui introduced this system Automatic Drainage Water Cleaning overcomes all sorts of drainage problems and promotes blockage free drains promoting continuous flow of drain water. The proposed system is used to clean and control the drainage level using auto mechanism technique.

B. Automatic drainage cleaning system with the use of solar energy.
Author Mohammed Thaha Ansari, Rahul George Kuruvilla, Sobin Biju Mathew implemented this solution to theses social relevant problems and as a solution to the health issues caused thereby, we propose an automated mechanism, "Automatic Drainage Cleaning Mechanism with the aid of solar energy"[3]. They proposed system is used to clean and control the suspended waste in drains eliminating the human labour involved in doing so.

C. Automatic Drainage Cleaning System Using Solar Panel.

Author Abhishek Anil Batavale, Santosh Dhebe proposed an automated mechanism," Automatic Drainage Cleaning System Using Solar Panel". "This system is used to clean drainages eliminating human labor involvement and to optimize the process of collection of waste [4]".

D. Automatic Trash Removal System in Water Bodies.
Author Rahul Prakash K. V, Jithu Markose introduced system called Automatic canal cleaning system makes use of solar power to remove floating trashes. "The device is placed across the water body so that flow occurs through lower grids [5]." "This system will be also helpful for Pampa and "Namami Ganga" projects for cleaning rivers from trashes like dhotis, flower offerings and other wastes [5]".

E. Garbage collection robot on the beach using wireless communication.
This article presents the garbage collection robot on the beach using wireless communication. The result of robot performance where found that the robot can move with the average speed of 0.5meter per sec.

III. BLOCK DIAGRAM AND SYSTEM ANALYSIS

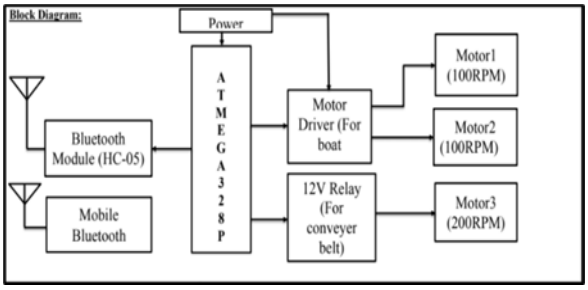

Fig 1: Block diagram of system

Our Main aim in this project is to lift waste from the water surface and collect them within a tray. It consists arrangement of conveyor which is place on shaft of motor. Due rotation of motor conveyor rotated. As the conveyor is move, it collect water debris, waste garbage and plastics from water bodies.
As the machine is placed within the water the waste debris in water will get lifted and it moves in upward direction. As the waste debris reaches the upper extreme position it'll get dropped within the tray.
Hence this may end in cleaning of water surfaces and safe collection of waste debris from water. Propeller is employed to drive the machine on the river and run with help of PMDC motor. The total electrical devices are controlled by Bluetooth transmitter and receiver which use to control the machine remotely.

IV. COMPONENTS

1. Arduino Board: Arduino Uno board is predicated on the ATmega328P. It consists of 14 digital input/output pins during which 6 are often used as PWM outputs, 6 analog inputs, 16 MHZ quartz, a USB connection, an influence jack, an ICSP header and a reset button.
2. Battery: This is a lead acid rechargeable battery. This machine consists of 4 batteries which provides output like 2A, 8V for operation of setup.
3. L293D Motor Driver Board: The 293D is used to provide bidirectional drive current up to 600Ma and voltage from 5V to 36V.L293D consist the output clamping diodes for protections.
4. HC 05 Bluetooth module: This Bluetooth module designed for transparent wireless serial connection. This can be utilized in a Master or Slave configuration; it makes an honest solution for wireless communication.
5. Conveyor Belt: In this machine we used the polyvinyl Conveyor Belt. This is controlled by the motor driver circuit. This collects waste from water surface and store it into the bin.
6. DC motor: In this machine two PMDC motors are used, and these motors are used to control the direction of propeller. Another BO (battery operated) DC motor won't to control the conveyer belt and DC servomotor used for tracking system.
7. Relay Module: This module provides the protection to the microcontroller from the higher load current.
8. Solar Panel: A solar panel consist no. of photovoltaic cells, which may be wont to generate electricity through photovoltaic effect. This energy used to charge the batteries. Solar output is given to the DC Regulators.
9. Blucontrol [android application]: This android application in installed in mobile phones to regulate the setup automatically which may be downloaded from the android app market in freed from cost.

IV. APPLICATIONS

- Can be easily installed for domestic sewage treatment.
- These are often used for correct treatment of sewage also on avoid blockage of drains.
- Portable and compact in size.
- Manual assistance is not required.
- In this Pandemic situation, it's much better to avoid contact with patients, so we can modify and use this system in hospitals as well to collect medical waste.

V. ADVANTAGES

- Easy to use and flexible.
- Eco-friendly.
- Need less manpower.
- Use of renewable energy Sources.
- Cost effective
- Maintenance cost is low.
- This is efficient method

VI. CONCLUSION

This is simple and cost-effective water cleaning Mechanism. And is generally intended to support water trash cleaning and eliminating water contaminations like plastics, wastes, water trash which is coasting on stream and lake surface.

This project is for keeping up human wellbeing and for expanding the existence of sea-going creatures.

Solar cannel trash removal system will successfully replace manual drainage cleaning ways.

So, our project is economical and efficient using solar energy.

This type of system is designed and fabricated successfully it works satisfactorily. The solar powered water trash Collector can prove to be a helping hand in controlling the increasing problem of water pollution. It can greatly reduce the problems caused by floating waste.

VI. FUTURE SCOPE

To deal with the floating garbage and other pollutants, we have a wide scope for this future to use on bigger scale.

The proposed project can extend the project by adding wind generation to charge the battery from turbine energy.

We can also extend the project by adding one suppression motor to suppress the dust particles in the storage tank.

Increase the tank size for more particles to store which are collected from the drain water.

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