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Article

Environment Sustainability through Smart Waste Collector

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I N F O

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A B S T R A C T

This paper stress on design and fabrication of the waste collector over water. India is a country with culture and different religious festivals which occasionally reasons pollution amongst which water pollution is main. To overcome the problems regarding the waste which is accommodated in the rivers and lakes, app controlled boat can be used. The boat will be incorporated with rods and nets attached to it. The boat will also be equipped with solar panel, camera and SONAR sensors to detect any collisions path.

Keywords: Sonar Sensor, Solar Panel, Beacon Device

Introduction

Plastic is the general common term for a extensive range of synthetic or semi synthetic organic solid ingredients suitable for the manufacture of industrial products. Plastics are characteristically polymers of high molecular weight, and may comprise other materials to progress presentation and/or decrease costs.

Plastic is one of the few new chemical ingredients which pose environmental problem. Polyethylene, polyvinyl chloride, polystyrene is largely used in the manufacture of plastics.

Tons and tons of plastic waste in the form of bottles, bags and other containers are routinely discarded into the sea. All the plastic wastes are trapped in fishing net and fisherman has to manually remove it. Which is similar to drawing water from the well?

Existing System

- The existing system is completely a mechanical grounded project.
- It is a stationary system, simply kept in the sewage area to collect the wastes passing over it.
- The chain and sprocket are used for rims undertaking, which has fitted fins to collect the wastes from the sewage.
- The rotation of the chain along with the rims will push the boat in forward direction; the floating wastes are collected between different sizes of fins and put off the wastes in the bin that is placed at the backside of the system.

Proposed System

Objective

1. The objective of the proposed project is to design and fabricate an automated boat for waste cleaning in the rivers, oceans, etc.
2. Cleansing of lakes and rivers can be done with ease without harming human life

3. The collected waste can be used more efficiently in other provinces like road fills and creation of composts.

Features

1. The boat will be incorporated with rods and nets attached to it.
2. The boat will be prepared by a 360º camera to preserve a pathway on boat.
3. Boat will be automated by an application to run with Bluetooth beacon device, motor and as a backup Solar panel can be used.
4. Complex shaped objects are detectable and the distance is calculated through sonar sensor.[2]

Advantages

- The boat will be automated so there is no need for human to be in that boat.
- This planned system is to minimalize or overwhelmed the problematic confronted while by means of manually operated machine.
- It is very useful for small as well as big lake, rivers where waste is contemporary in great amount. Environment friendly system.[2]

Components Required

- Sonar sensor
- 360-degree tracking camera
- Plastic sensor
- Magnet
- Solar panel
- Boat[2]
- Net
- Android Device
- Beacon device.

Working

- The boat is handled by A BLE Beacon Technology with Android application which is an IoT application
- The nets involved to it collects the waste floating on water and after the nettings get completely unavailable with waste, it closes in the forward direction and the boat is transported back at the starting point.
- A 360º camera is used for tracking the route of waste collector and the obstacles are detected by sonar sensors.
- The waste collector has a motor which runs on fuel and has the option of using solar energy in absence of fuel.[1]

Future Scope

- The machine can be designed for deep cleaning
- Garbage which is collected from this process can be
- converted into energy and that energy can be used for engine of the boat instead of solar energy and wind energy
- Capacity of the machine can be increased for cleaning big rivers and lakes.
- Provisions for cleaning waste which is settled on the bottom can be implemented with the help of sonar.
- Drones can be used with this project to increase the usability and scope of the project which can help reach places which are not reached by the boat.
- The collected waste can be further sorted with the help of sensors which will do a basic sorting of the waste.

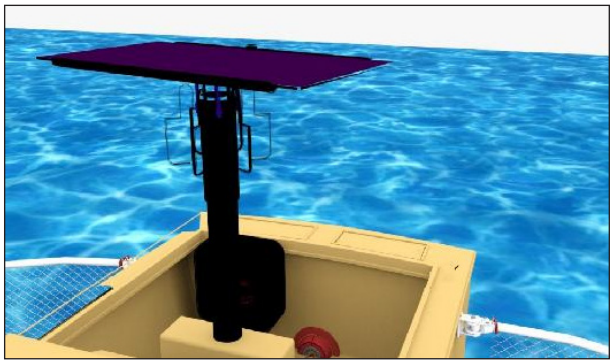


Figure 1.Top View of Boat

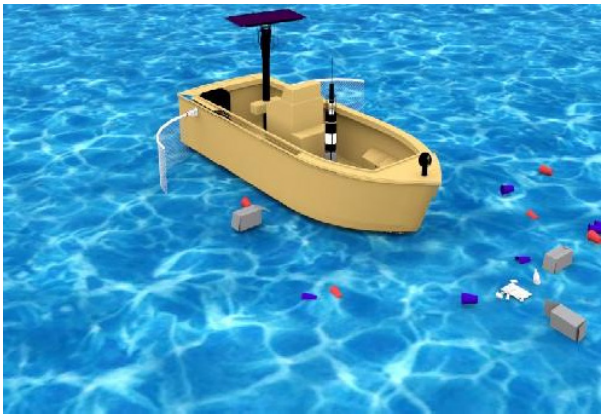


Figure 2.Front View of Boat

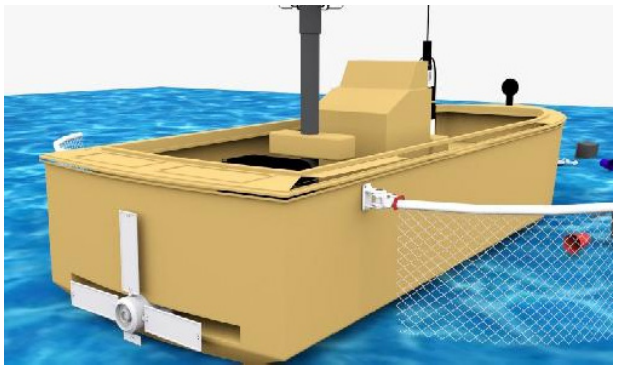


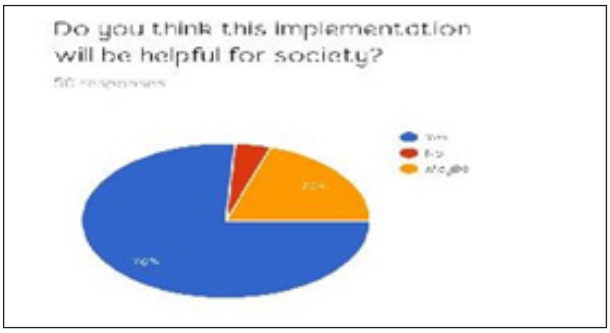
Figure 3.Back View of Boat

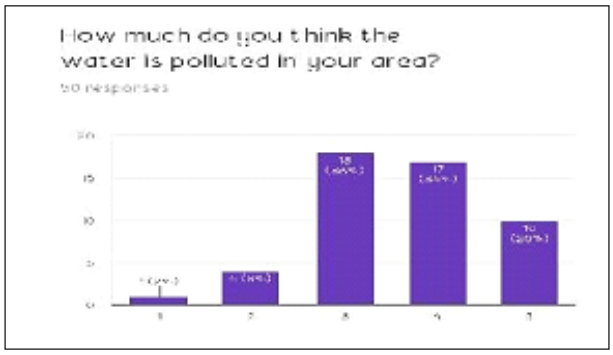
Conclusion

The main benefit of this methodology is intended to be an increased likelihood of securing the human life by involving technology in jointly creating a “smart world” that combines scientific with environmental knowledge, and which then allows meaningful experiments. It also benefits to the

environment and it is the major step towards the "Swatcha Bharat" initiative which can ease the collection of waste by saving time and human intervention. Significant research effort has been expended in the development of 3Dmodel of waste collector. This objective is attainable, and offers a radical innovation for waste management.

Survey Statistics





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