Design And Fabrication of River Cleaning System

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Abstract- *In order to replace the usual manual cleaning rivers and lakes water garbage and so on, and then improve the clean-up efficiency, while addressing the work force of large save. Low security issues, a new Design and Fabrication of River Cleaning System is developing. The System is mainly composing of turning gather system, turning collection system and so on. Its structure is simple, safe and trustworthy, and it takes energy from Battery as the main source of energy. It can be broadly used in rivers, rivers and lakes water garbage collect operations. The machine has the advantages of high degree of automation, simple operation, safe and effective.*
It is still more use of artificial or mechanical salvage way to deal with water garbage, but the clean-up efficiency is low, high transport costs, human input, high labour intensity. The projected system is focusing on design and fabrication of the river waste cleaning machine. Now a day's our national rivers are junkyard with a lot of waste and loaded with contaminant, waste.

The Government of India is also taking initiative towards river cleaning project. By taking this into analysis, we are proposing a low cost design for river cleaning machine. This machine is designed generally to clean river water surface. The main goal of this project to reduce the man power time used for cleaning the river.

The automation can be achieved through the electronics system including Arduino Uno, Wi-Fi module and driver circuit etc, Of the cleaning system, thereby increasing the efficiency of surface cleaning, reduce transportation costs, reduce human input, to ensure the safety of the operator.

Keywords- Arduino Wi-Fi Module, Motor, Conveyer Belt and Collector.

I. INTRODUCTION

The river cleanup machine will be used in those places where there is waste debris in the water body which are to be removed. The projected machine will contain a conveyer mechanism which collect and remove the wastage, garbage plastic wastages from water body. As the machine will lift the wastage from the water, the final result will be decline of water pollution, flow of pure water. At some time the death of aquatic animals also can be reduced.

The research and development flow of water garbage disposal of rivers and lakes are simple and safe, trustworthy and highly automated. It can not only clean up the lake water garbage, but also clean up the surface waste and have low production cost. of the design fabrication of river cleaning system, thereby increasing the effectiveness of surface cleaning, reduce transportation cost, reduce human input, to make sure the safety of the operator.

II. METHODS AND MATERIAL

A.   Objective:

To keep the Godavari river clean and pollution free and to avoid the death of aquatic animal. Collect many types of wastes:- Our product should not be restricted to collect only one type waste. It must diversify its function to accomplish the given task. The mechanism made for to collecting wastes should be tough enough to collect plastic wastes, plastic bottles, organic wastes which include crop debris, food wastes any type of wastes which is outing on water.

Less human interference:- The very basic idea should be satisfied that is to avoid the interference of the operator. This will happen only by the adoption and sustained usage of technology in the workspace.

Easy disposal of waste:- Another important thing is easy removal of wastes which are collected in the collecting box.

B.   Working

Detection: The process of detection of wastes is done using a proper motion sensor or by using camera of suitable pixels. Waste picking mechanism: It drags the wastes in the collecting tank which are being detected.
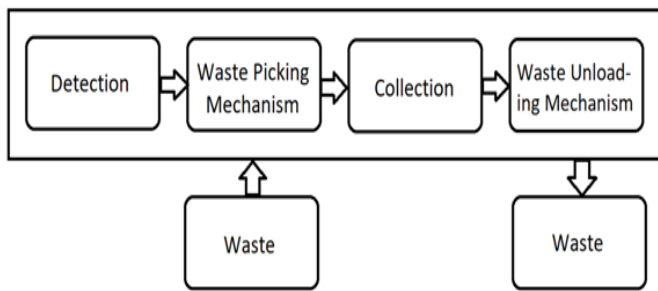
Fig 1. Block Diagram

Collection: There should not be any leakages in the collecting box.

Waste unloading mechanism: When the capacity of collecting tank exceeds its predetermined collecting limit, a compact and portable unloading mechanism comes into action for removal of wastes which are being collected in the collecting box.
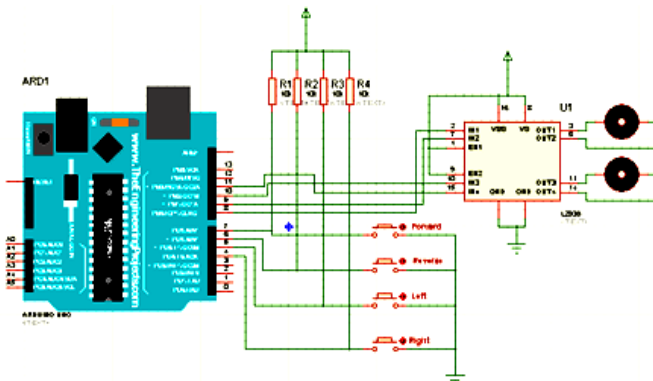

Fig 2. Stimulation Diagram

Ardunio Uno: The ATmega328 provides the following features: 4/8/16/32K bytes of In- System Programmable Flash with Read-While-Write capabilities, 256/512/512/1K bytes EEPROM, 512/1K/1K/2K bytes SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three exible Timer/Counters with compare modes, internal and external interrupts, a serial programmable USART, a byte-oriented 2-wire Serial Interface, an SPI serial port, a 6-channel 10-bit ADC (8 channels in TQFP and QFN/MLF packages), a programmable Watchdog Timer with internal Oscillator, and five software selectable power saving modes.

A sensing system is also made that generates an equivalent voltage corresponding to the amount of water used by the consumer.

Fig 3. Arduino UNO board

The ADC Noise Reduction mode stops the CPU and all I/O modules except asynchronous timer and ADC, to minimize switching noise during ADC conversions. USART, 2- wire Serial Interface, SPI port, and interrupt system to continue functioning. The Power-down mode saves the register contents but freezes the Oscillator, disabling all other chip functions until the next interrupt or hardware reset. In Power-save mode, the asynchronous timer continues to run, allowing the user to maintain a timer base while the rest of the device is sleeping. In Standby mode, the crystal resonator Oscillator is running while the rest of the device is sleeping. This allows very fast start-up combined with low power consumption.

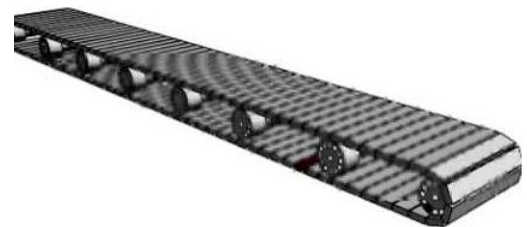Conveyer Belt: In the River Water Cleaning Machine we have used the polyvinyl Conveyor Belt.

Fig 4. Conveyer Belt

The conveyor belt is controlled by the arduino system with using motor driver circuit. The conveyor collects all floating garbage from water.

III. RESULTS

In the River Water Cleaning Machine we have used the polyvinyl Conveyor Belt. The conveyor belt is controlled by the arduino system with using motor driver circuit. The conveyor collects all floating garbage from water.

Fig 5. Working prototype of Project.

We have also tested our system. The results of the same are good.

IV. FUTURE SCOPE

In future, proposed system can be made fully autonomous by embedding the artificial intelligence with some predefined set of rules and standard. With the use of Artificial intelligence, smart water distribution can be carried out automatically without human intervention.

1. Implementation of camera with light source, so that cleaning can be done in the night time as well.
2. Implementation of laser sensor for easily detect the waste and to make the device automatically move towards it.
3. Total weight optimization.

V. CONCLUSION

The project design and fabrication of river cleaning system has designed which is very much economical, easy to operate and helpful for water cleaning and it can be modified with more cleaning capacity and efficiency.

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