BET'S

BASAVAKALYAN ENGINEERING COLLEGE, BASAVAKALYAN

DEPARTMENT OF COMPUTER SCIENCE ANDENGINEERING

A

PROJECT SYNOPSIS

ON

"Design of River Waste Water Collector Using Arduino"

Sponsored by 46th Series KSCST Project

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ABSTRACT:

There has been a tremendous growth of use of pond/lake water especially in a populated country like India. The source of water varies from place to place. It may be a groundwater, rainwater or water combined from two or more sources. The water stored in it may have fine particles suspended particles or impurities in dissolved form. With the passage of time, sediments scale and algae get deposited on the walls, ceiling and floor of the pond/lake.

Other possibilities of impure water are dust or suspended solids inside water, germs, bacteria, or parasite growth. These deposition contaminates the water and makes is unfit for use. Hencepond cleaning is very important but, it is a tedious job. When manual cleaning process is considered, it is a risky task. Considering depth of pond the shortage of oxygen can be a majorissue and may even result into accidents. Hence the need for use of robotic systems has become more apparent. The proposed robot will clean the pond without much effort. However, a human part is needed to take the robot to the location of the pond and to place the robot inside the pond. Once placed, the robot cleans the pond by the user and take out the robot after the completion of the process. The robot takes care of the operations like cleaning, water sucking etc.

CHAPTER 1

PREAMBLE

INTRODUCTION

The Over two thirds of Earth's surface is covered by water; less than a third is taken up by land. As Earth's population continues to grow, people are putting ever-increasing pressure on the planet's water resources. In a sense, our oceans, rivers, and other inland waters are being "squeezed" by human activities so their quality is reduced. Poorer water quality means water pollution. This invention relates to skimmer boats, i.e., work boats for collecting and disposing of floating solid waste materials in harbor's and waterways.

The invention is more specifically directed to highly maneuverable vessels equipped with means for picking up floating debris, means for storing the debris on the vessel, and means for discharging the debris from the vessel to a storage area, which may be ashore or which maybe another vessel such as barge. Many work boats and vessels have been proposed for collection of floating solid waste and other debris. These may typically be formed as a catamaran-type hull, i.e., a pair of pontoons or sponsors, or asam hull, with paddle wheel or screw driver propulsion, and an operator station . In one typical trash skimmer design, one or more hydraulically powered open mesh convey or are positioned between the pontoons of acatamaran- type twin-hull vessel. As long as the draining system is considered the function of the main drainage system is to collect, transport and dispose of the water through an outfall or outlet. Impurities in drainage water can be only like empty bottles, polythene bags, papers, etc. It's an Industrial Working Prototype of Entirely Solar Powered Water Cleaning Mechanism which Cause to collectfloating garbage and solid waste from the water surface and collect it into its floating bin. It can be programmed, scaled up to any size and can operate remotely.

OBJECTIVES OF THE PROJECT:

1. 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 floating on water.

2. 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.

3. Collect more amount of waste: Very firstly it must collect around 5kg of waste at a time when it is being left to the water.

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

5. It must be stable: To make the product stable it must get through with proper design calculations. It should withstand extreme conditions such as additional load exerted by the water waves and as well as by the wastes which are being collected.

6. Safety for the user: The product must be user friendly.

7. Environmental friendly: It should not harm the aquatic animals.

EXISTING SYSTEM:

Most existing multi-robot systems use generic domain in depend entre search plat-forms. While the sear ideal for design, development and testing of associated software algorithms, they do not capture real-world constraint standard there for enotpractical for deployment. Specialized robotic watercraft have been success- fully used in deep sea tasks ranging from mapping deepest underwater caves to tele-supervised sensor fleet for ocean surface and sub-surface studies. Tele- supervised Adaptive Ocean Sensor Fleet is an example of one such deep sea multi-robot science exploration system that combines a group of robotic boats to enable in situ study of phenomena in the ocean-atmosphere interface, as well as on the ocean surface and subsurface. The OASIS platform is a long duration solar powered autonomous surface vehicle, designed for autonomous global open ocean operations. While these plat form share extremely capable and engineered specific to the requirements of the operating domain, the large associated cost with these platforms make the main feasible for large scale deployment.

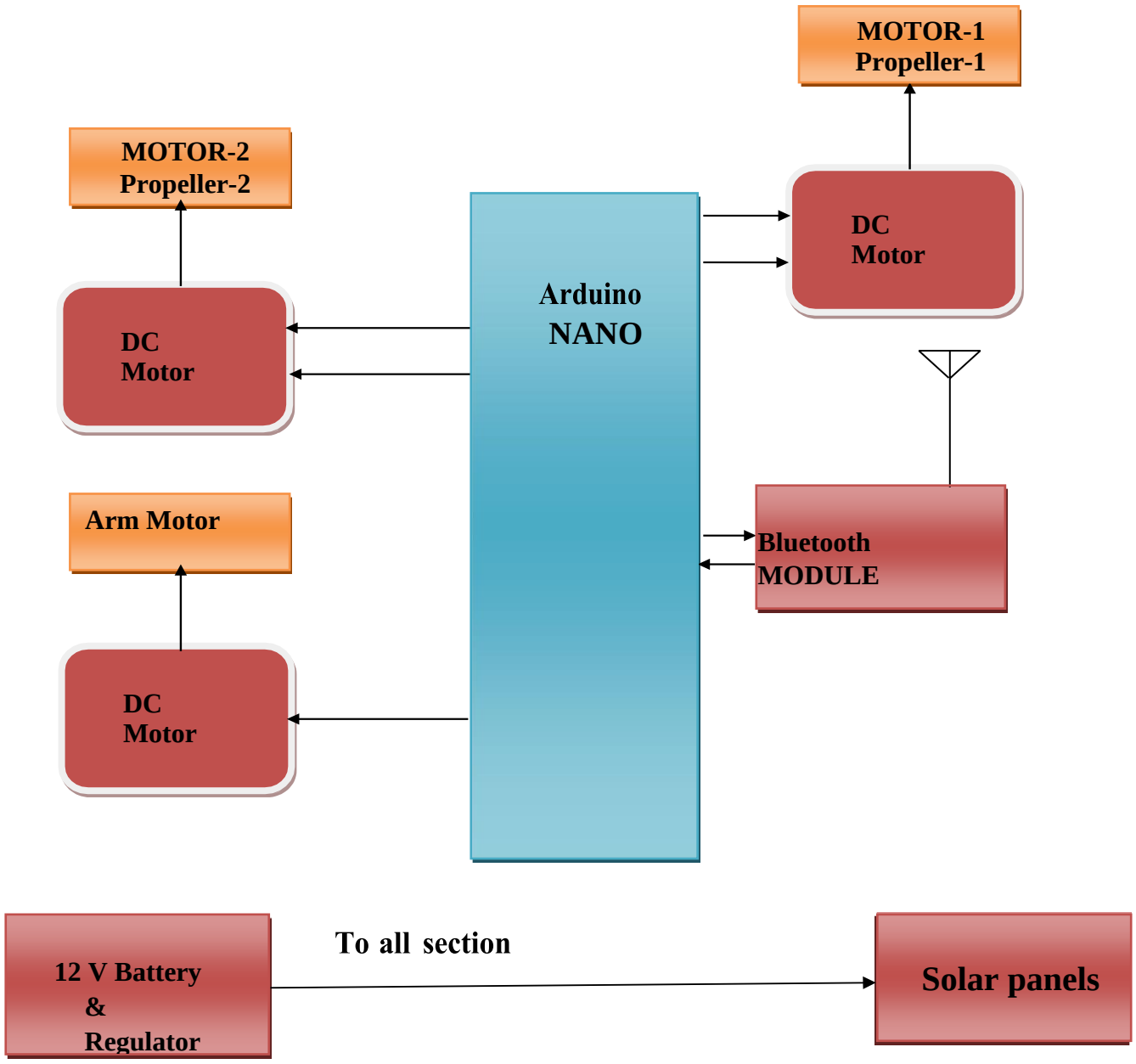
PROPOSED SYSTEM:

In this project the main goal of the machine is to boost the waste particles from the water floor and dispose them in the tray. We're fabricating the far flung operated river cleaning device. The collecting arm is operated via the motor manually using a far flung. The collecting plate is coupled among the 2 hollow PVC pipes to collect the waste materials from river. The collected wastages are thrown on the collecting tray with the help of mechanical arm. The project is having two fans which are used to drive the machine on the river. The fans run with the help of two BLDC motor. The total electrical device is controlled by RF transmitter and receiver which use to control the machine remotely. The machine works based on signals transmitted from transmitter.

The remote have switches to control BLDC's and the DC motor. We can control the BLDC's by adjusting the joystick. Other two switches are available for moving the arm up & down by working the dc motor. Ultrasonic sensor is placed a trear-end for obstacle avoidance

CHAPTER 2

METHADOLOGY



Components Used:

Microcontroller: Microcontroller is designed by Intel in1981.Itisan 8-bitmicrocontroller. It is built with 40 pins DIP (dual inline package), 4kb of ROM storage and 128bytes of RAM storage, 2 16-bit timers. It consists of are four parallel 8-bit ports, which are programmable as well as addressable as per the requirement.

Battery: Battery supply of 12V is used. Working current of battery is1.2Ah.

L293D: L293D is a dual H-bridge motor driver integrated circuit (IC). Motor drivers act as current amplifiers since they take a low-current control signal and provide a higher current signal. This higher current signal is used to drive the motors

Power Supply: All digital circuits require regulated power supply. In this article we are going to learn how to get a regulated positive supply from the mains supply.

Motor: DC motor is used. Motor controllers often include a manual or automatic means for starting and stopping the motor, selecting forward or reverse rotation, speeding up or slowing down, and controlling other operational parameters.

Bluetooth: Bluetooth serial module is used for converting serial port to Bluetooth. These modules have two modes: master and slaver device. The device named after even number is defined to be master or slaver when out of factory and can't be changed to the other mode. But for the device name after odd number, users can set the work mode(master or slaver)of the device by at commands.

Solar panels: A solar panel is a device that converts sunlight into electricity by using photovoltaic cells. PV cells are made of materials that generate electrons when exposed to light. The electrons flow through a circuit and produce direct current electricity, which can be used to power various devices or stored in batteries.

Working:

Set up Bluetooth availability between android application and the Bluetooth module. Check wheather the gadget is associated. Connect the Bluetooth module(HC-05) to our mobile and then move to app. Whenever associated given the pre-characterized directions to the smaller scale telephone of the portable handset. At that point they put away the directions on a

specified android application which is installed on a mobile. Open the android application and give the instructions which we are given in the arduino program. Then the machine will works.

DESIGN AND DEVELOPMENT

In this project the foremost aim of this machine is to lift waste debris from the water surface and dispose of it within the tray. It consists of an arrangement of arm which is placed on the shaft of the motor. Due rotation of motor the arm is moved, it collects water debris, waste garbage and plastics from water bodies. Because the machine is placed with in the water the waste debris in water will get lifted and it moves in an up ward direction. Because the waste debris reaches the upper extreme position it'll get dropped within the tray. Hence this will end in cleaning of water surfaces and safe collection of waste debris from water. Propeller is used to drive the machine on the river and run with the help of a PMDC motor. The total electrical devices are controlled by an RF transmitter and receiver which are used to manage the machine remotely. Collecting Mechanism is employed in our project to beat real time issues as thanks to water tension garbage is difficult to collect. By using this four bar mechanism, it rotated at a particular angle intended to gather the rubbish for the model. it's two windows open and shut as the user wishes using remote to ON and OFF the mechanism. Water wheel is bolted on a shaft which is placed aboard the frame. The aim of a water wheel(propeller) is to man forever the machine forward or backward on water. Motor is used to rotate the water wheel with the assistance of a chain drive mechanism. In this project tracking system is additionally implemented which is helpful to regulate angle of solar array with reference to sunrays. So that we get more solar output.

CHAPTER 3

RESULTS

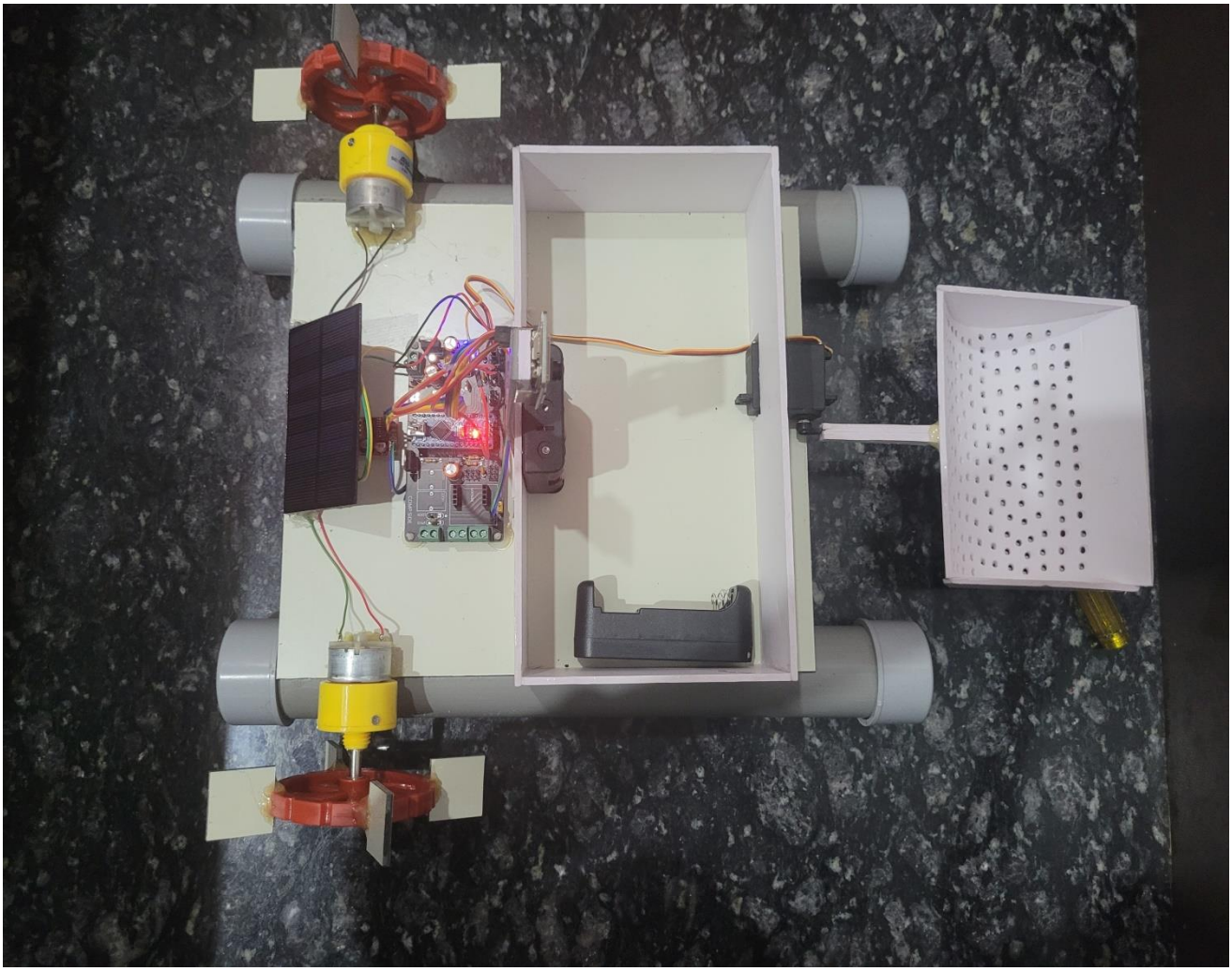


Fig: River Waste collector machine

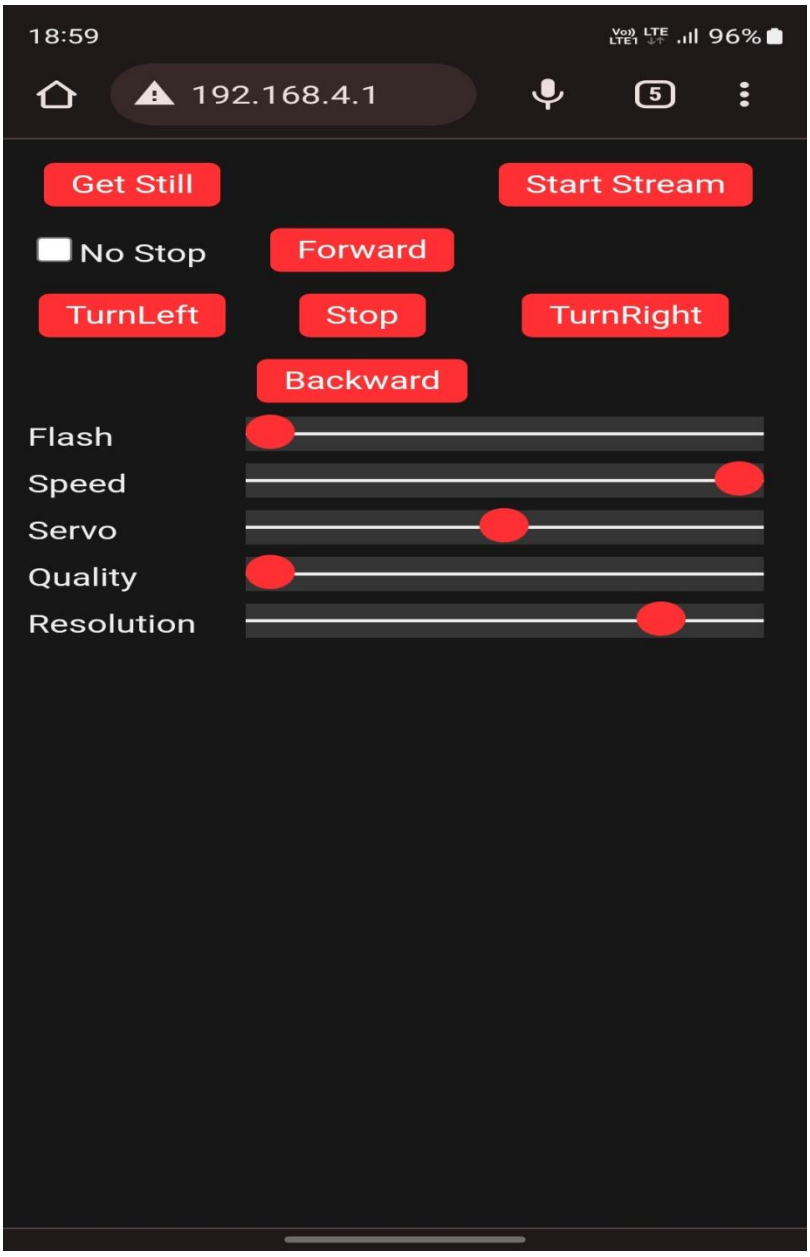


Fig: Android App

CHAPTER 4

CONCLUSION

About 71 percent of the Earth's surface is water-covered and only about 0.3 percent of our fresh water is found in the surface water of lakes, rivers, and swamps. In developing countries, 70 percent of industrial wastes are dumped untreated into waters, polluting the usable water supply. On average, 22 million tons of fertilizers and chemicals are used each year.

Aqua Drone was designed with an intention of clean the water debris floating on the lake, by using our drone we can collect many floating wastes like plastic bottles, bags, flowers without any human interference and then dispose of the waste easily, one can clean the lake just by operating it with the help of remote control. Also, our product helps in reducing the water pollutants to a certain extent. The major advantage is the safety provided by our product that is one need not risk his life while he is cleaning the lake and we just need one person to control the drone. The product is socially helpful for the laborers who clean the lake and economically viable. If the product is used in large numbers, it would be a perfect example for "Technological application in environmental protection".