River Cleaner Boat

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Abstract: *A river cleaner boat is a specialized designed to collect and remove, pollution, and waste from rivers and other water bodies. The main goal of these boats is to help maintain clean waterways, protect aquatic life, and improve water quality. These boats play a key role in environmental conservation, reducing pollution, and ensuring that rivers remain healthy for both humans and wildlife.*
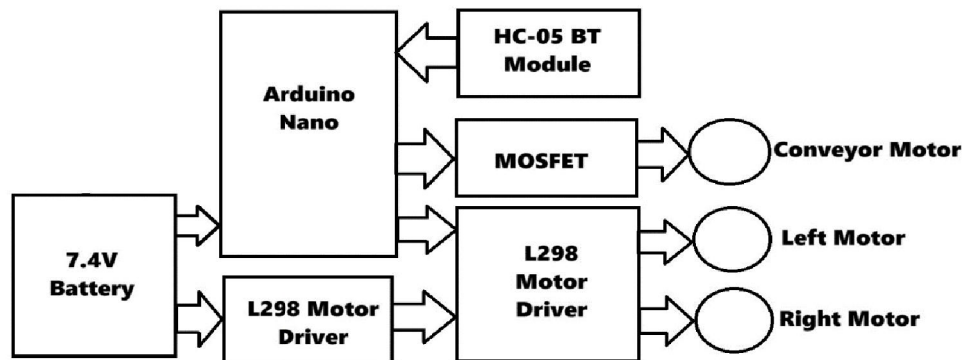
Keywords: river cleaner

I. INTRODUCTION

Introducing our innovative River cleaner Boat. The Environment issue which comes up from year to year and still cannot be solved is about garbage and waste from various places dispose into rivers. A river cleaner boat, also known as water cleaning boat. it is a motorized designed to collect and remove floating debris and waste from rivers, lakes, and other water bodies, aiming to reduce water pollution and improve water quality. By removing waste, these boats help to reduce water pollution, improve water and protect aquatic life
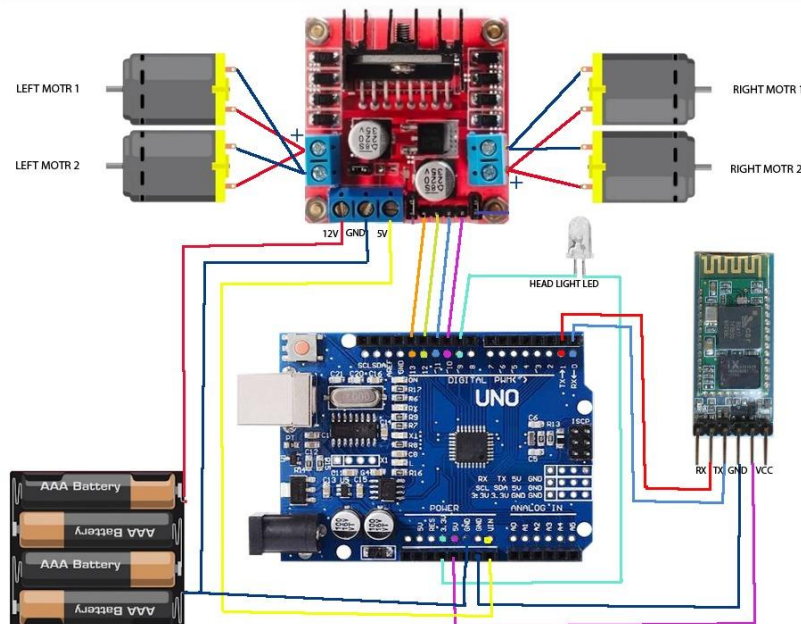
II. IDEA OF PROJECT

We saw something in our area and the surrounding area after which we got the idea of the project like in the siddheshwar temple pond and many other ponds we saw there was a lot of garbage is there
The idea comes by locking at the current situation of our river which are dump with lots garbage loaded with pollutants, toxics material etc. Water is the basic needs. for all living beings, it is important to maintain the cleanliness and hygiene of Water. For this reason, The "River cleaner boat is used in that places"
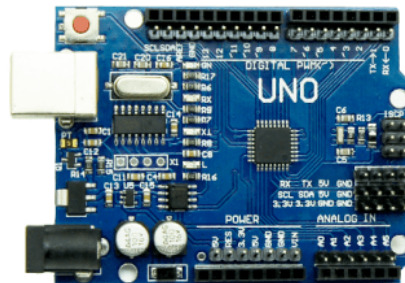
III. BLOCK DIAGRAM

IV. CIRCUIT DIAGRAM

V. HARDWARE DESCRIPTION

1. Arduino Uno

The Arduino Uno is a microcontroller board. it is developed by Arduino Company. It have sets of digital and analog input/output pins it is easy to use for beginners. The Arduino can be powered by USB cable.

The Arduino board has 14 digital I/O pins. 6 analog I/O pins it have the same microcontroller as the Arduino Nano board. it is 9th version in series of USB -based Arduino boards. It also called as the ATmega328 . The Arduino allows to uploading new code to user.
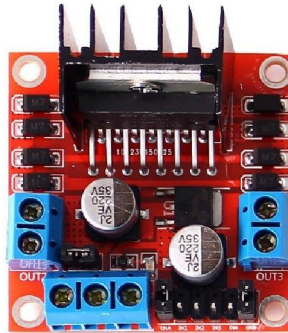
Specifications

- 8 bit AVR microcontroller
- 32 KB Flash memory
- 2 KB SRAM
- 1 KB EEPROM
- Operating voltage 5V
- Input voltage - 7-12V

- VIN - External voltage input
- Crystal Oscillator 16MH
- ICSP Header
- Memory SRAM
- Clock speed -16 MHz

2. L298 Motor Driver Module

The L299N motor driver control speed and Direction of DC electric motor. The L298N motor driver can control 1/2 motor. It is used in robotics and any other projects. It have inbuilt heat sink to cooling just like a fan it is also known as cooling device. It is made by thermally conducting material**.**

Specification
- Control 2 DC motor and 1 steeper motor
- Voltage 5V
- Current 2A
- Pins - IN1, IN2, IN3, IN4, ENA, ENB, VCC, GND.
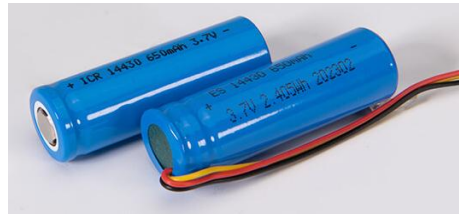
3. HC-05 Bluetooth Module

Jaap Haartsen they invited this Bluetooth. The HC 05 Module is used to wireless communication. It is pair with Smart Phone, Tablet etc. with use of this module we transfer the UART data. It can design easily. It is communicate with the help of radio waves. The HC-05 Bluetooth consist Master/Slave Configuration. It allows to make changing setting and configuring the module AT commands.

Specifications

- Version - 2.0 +EDR
- Voltage - 3.3V to 5V
- Current - 30mA
- Range 10 Meters
- Frequency - 2.4 GHz
- Password - 1234 OR 0000
- Communication- UART
- Model - Master & Slave
- Supports - AT commands
- Pins- VCC, TX, RX, GND, EN.
- Baud rate - 9600

4. lithium Ion Battery

Lithium battery is a rechargeable battery. The battery has positive node and negative node means cathode and anode. It stores energy to moving ions between anode and cathode electrodes. It battery consist long life and more energy.

Specifications

- Charge limit - 3.60V
- Cycle life - 1000-2000
- Operating temperature - Good

5. Gear Motor

A gear motor is an electric motor and a power reducer combined into a single unit that reduces the number of revolutions but increases the torque of the operating shaft. Such gears for electric motors are often used in modern machines and mechanisms, it is universal for many types of equipment. Some hybrid models combine practicality and durability. The housing is made of plastic and the gears are made of metal. This design gives a minimum noise level during the operation of the devices, the voltage can be from 12 to 24 V.

A hybrid gear motor is considered the best option when it comes, for example, to household appliances. Without it, a cordless mixer, a portable music speaker, an electric toothbrush or electric razor, a car vacuum cleaner, and much more would not work. Even the device that automatically opens curtains or raises blinds has a gear motor.

Specifications
- 5VDC Operating voltage
- Speed 32 rpm to 400pmr
- Power 0.37km To 5.5kw
- Voltage 415/230Three phase

VII. ADVANTAGES
- **Clean up trash:** It removes plastic,bottles, and other garbage floating in the river.And it prevent water from smelling. less garbage means the river smells fresher and stays healthier.
- **Looks better:**Clean river look nice and more enjyoable for people to visit. And aslo good for tourism it attract more visitor and activities like boating and sightseeing
- **Save time and efforts :**The boat does most of work so people don'thave to clean by hand. And it aslo spreads awareness when people see the boat cleaning they're reminded to keep the river clean.

VII. APPLICATION
- **Useful in tourism areas:** Keep rivers clean where people go for boating, sightseeing, or walking near the water.
- **Keeps farming water clean:** Makes sure the river water used for farming is clean and safe for crops.
- **Works near factories:**Collects waste that might come from factories before it pollutes the river.

VIII. FUTURE SCOPE
- We can install solar in the future and We can do automatic river cleaning in the future.
- We can use different types of sensors in the future.
- We can using this device to regularly we can take care of our river and ponds.
- The Cleaner rivers attract more tourists, which can boost local economies.

IX. CONCLUSIONS
A river cleaner boat is a very easy to remove garbage from river, ponds...etc. The river cleaner boat is cleaned up very faster than human. It is very low-cost device. It requires very less worker. it upgrades new technology. It is safe for fish and other animals in the river. We can using this device to regularly we can take care of our river and ponds.

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PROJECT IMAGE