WIRELESS RIVER CLEANING BOAT

AIM:

Design and development of Wireless River Cleaning Boat.

PURPOSE:

The "Wireless River Cleaning Boat" is a novel and innovative solution designed to address the growing concern of water pollution in rivers and water bodies. This project presents a cost-effective and eco-friendly approach to river cleaning by utilizing a remotely operated boat that is controlled via Bluetooth technology. The core functionality of this system is centred on its ability to be controlled wirelessly using a mobile device through Bluetooth connectivity. Users can remotely navigate the boat within the water body, enabling precise targeting of polluted areas. The cleaning mechanism consists of waste collecting tray and waste storing net. The collected waste is securely stored on the boat for later disposal, ensuring the efficient and responsible management of river clean up efforts.

DESCRIPTION:

Bluetooth module (HC-05) connected with ESP32 UART port. L293d interfaced with ESP32 digital pins. DC motors controlled through L293d H-bridge.

WORKING:

This boat has river cleaning mechanism that will take waste from water and drop into its mesh type structure. Boat will move on water with the help of two propellers. These propellers controlled by two DC motors. The boat moment and waste collection system controlled through Bluetooth app from smart mobile phone.

TECHNICAL SPECIFICATIONS:

HARDWARE:

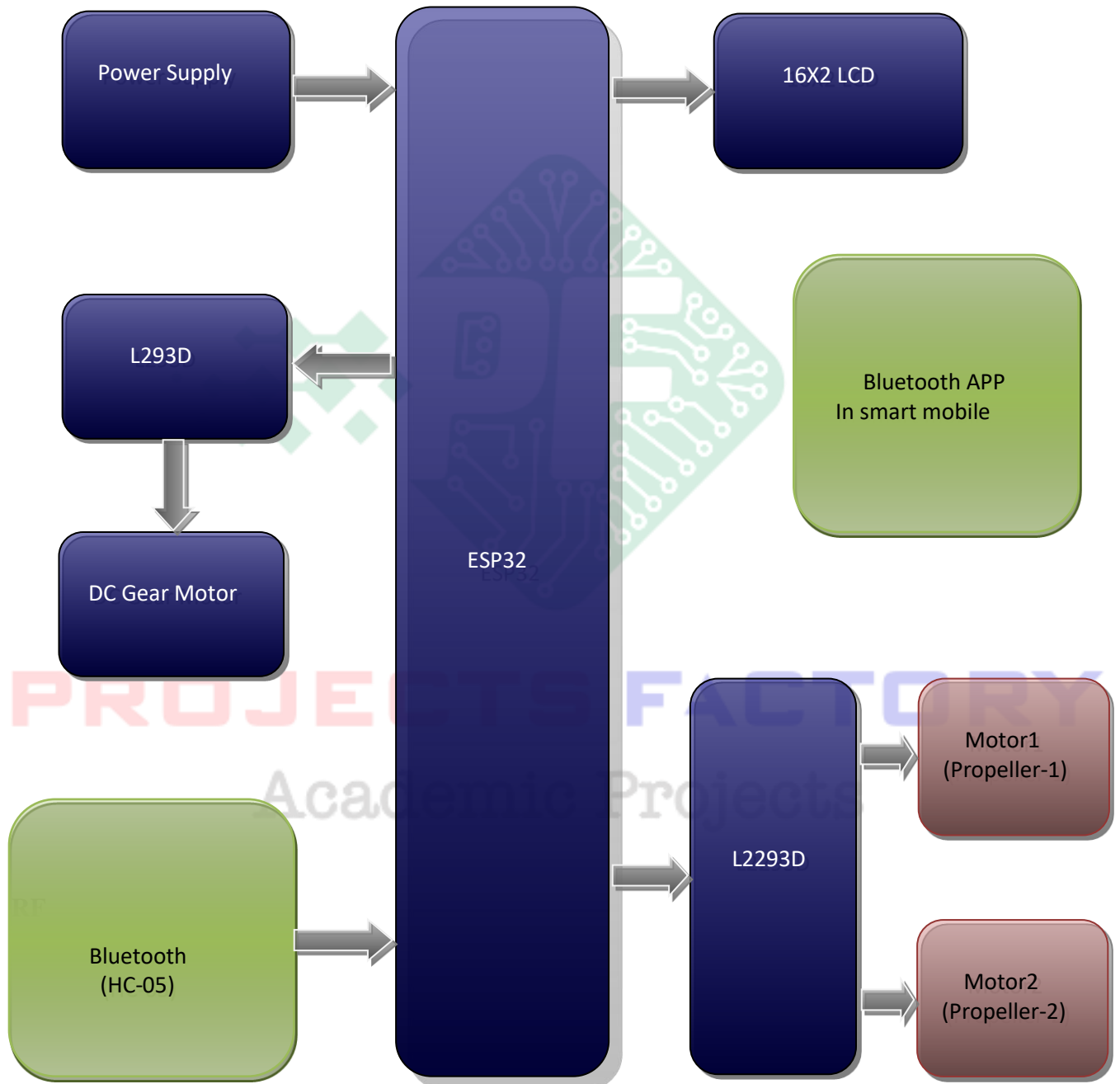|		
Microcontroller	:	ESP32 microcontroller
Crystal	:	16 MHz
LCD	:	16x2 LCD display
H-Bridge	:	L293D
Motors	:	DC motors
Bluetooth	:	HC-05
Power Source	:	12v 1 amp DC battery

SOFTWARE:

Arduino IDE
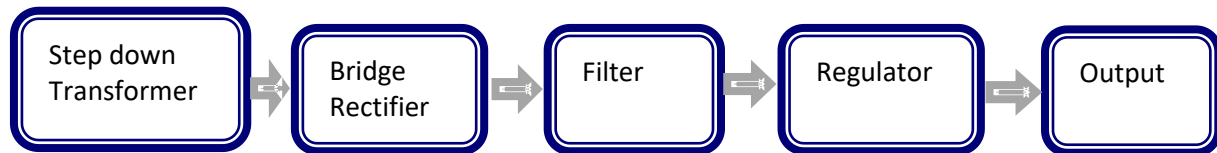
Proteus based circuit diagram

APPLICATIONS:

➢ Water cleaning robot
➢ Remote controlled River cleaning system
➢ River surface cleaning boat
➢ Water cleaning boat
➢ Pond cleaning boat

BLOCK DIAGRAM:

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┌──────────────┐                                    ┌──────────────┐
│ Power Supply │ ──────►          ┌─────►           │   16X2 LCD   │
└──────────────┘                  │                 └──────────────┘
                       ┌──────────┴────┐
┌──────────────┐       │               │            ┌──────────────┐
│    L293D     │ ◄──── │               │            │ Bluetooth APP│
└──────┬───────┘       │               │            │ In smart     │
       │               │     ESP32     │            │ mobile       │
       ▼               │               │            └──────────────┘
┌──────────────┐       │               │
│ DC Gear Motor│       │               │    ┌─────────┐  ──► Motor1
└──────────────┘       │               │    │ L2293D  │      (Propeller-1)
                       │               │ ──►│         │
┌──────────────┐       │               │    │         │  ──► Motor2
│  Bluetooth   │ ────► │               │    └─────────┘      (Propeller-2)
│   (HC-05)    │       └───────────────┘
└──────────────┘
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POWER SUPPLY BLOCKDIAGRAM:

| Step down Transformer | → | Bridge Rectifier | → | Filter | → | Regulator | → | Output |

INTERFACES COVERD:

- We have covered ESP32 controller interface and programming
- Boat structure design and implementation
- Bluetooth module interface