RC Bot for Cleaning Suspended Macro-particles in Stagnant Water Bodies

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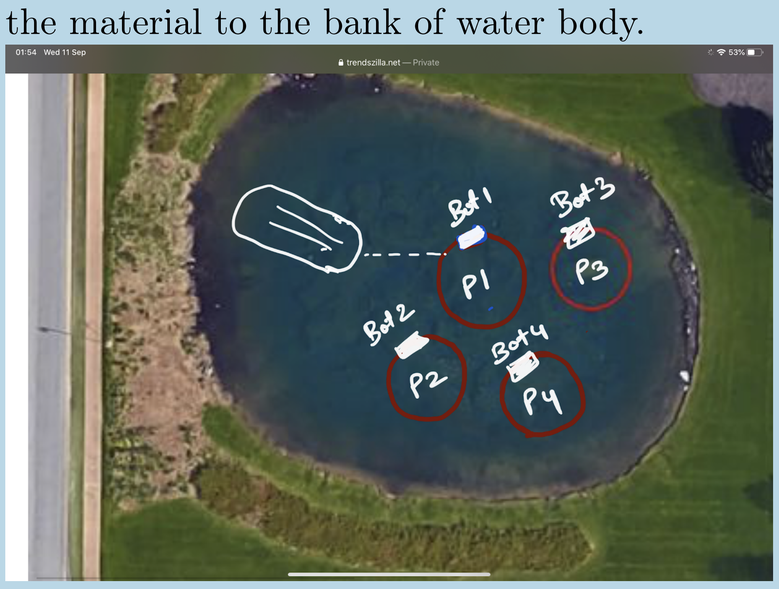
Problem

Stagnant water bodies across the world are constantly getting polluted. Since these water bodies do not have outlet, the pollutant accumulates over time. Among these a major chunk is of light materials such as plastic and light organic materials. These particles impede the sunlight to aquatic life and produce deadly chemicals. The biodegradable substance such as leaves and algae contribute in eutrofication while macro particles turn into micro-plastic through shredding and sunlight degradation. These micro-plastic then end up in food chain through fish and aquatic life.

Idea

The idea is to remove these floating waste from the surface water by a sweeping a large area of water body through smaller autonomous bot while a larger powerful boat will carry the drag the material to the bank of water body.



Existing Products

Our project is inspired by the The Ocean Cleanup startup, where similar mechanism is used to sweep the larger ocean area with full size powerful boat. The ocean currents are being used to collect waste plastic in one place which is dragged at the shore with the help of large floating pipes.

Innovation

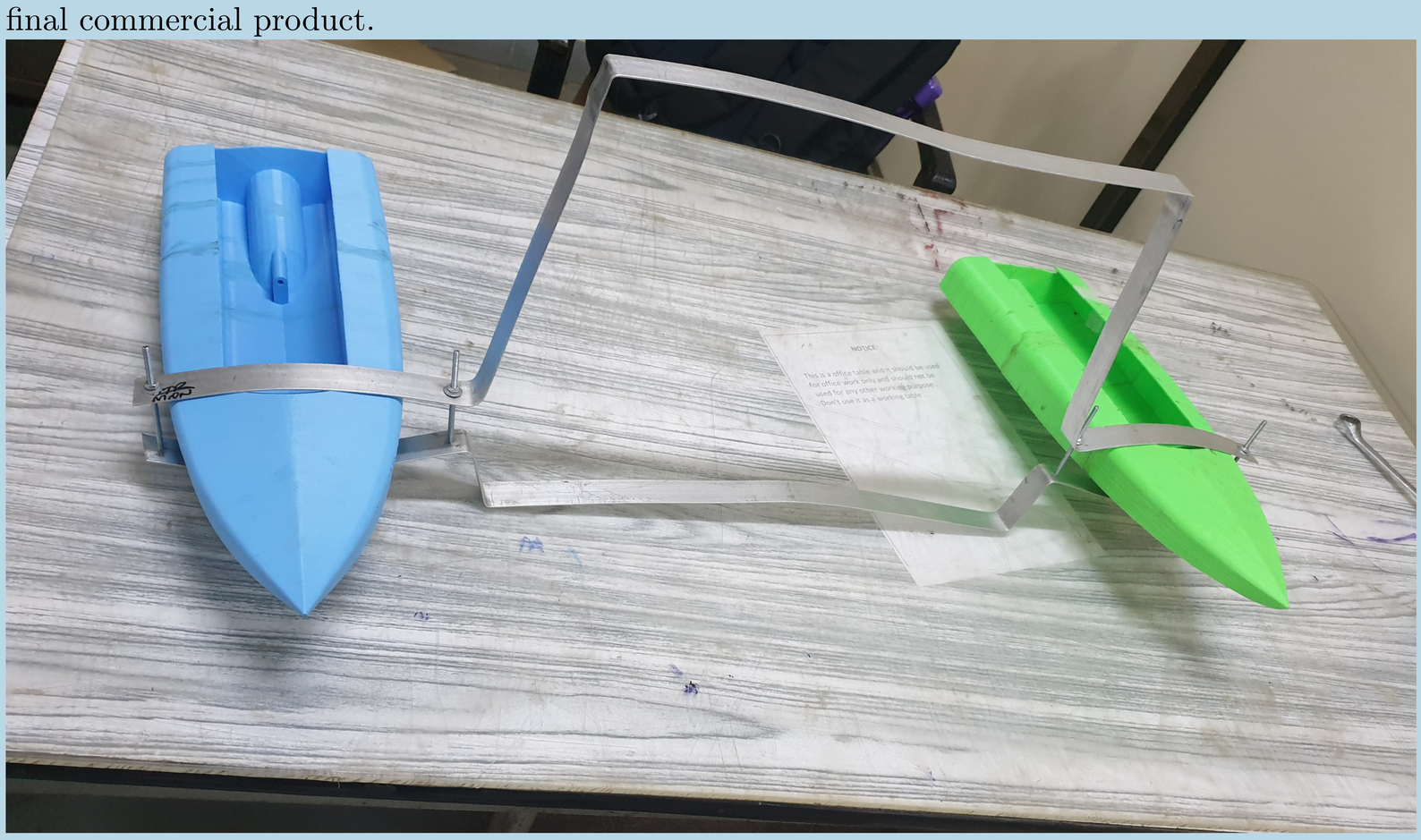
The idea of product stems from the unavailability of any effective and affordable method for cleaning stagnant water bodies. Here the innovation is the scaling of a technology available for oceans and implement it to the smaller local water bodies.

Market

The Market for current product consists of local authorities at district level, some NGOs who require equipments for cleaning large stagnant water bodies. Swimming pools owners will also be attracted to buy the product for regular cleaning of swimming pools from leaves and other floating debris.

Prototype

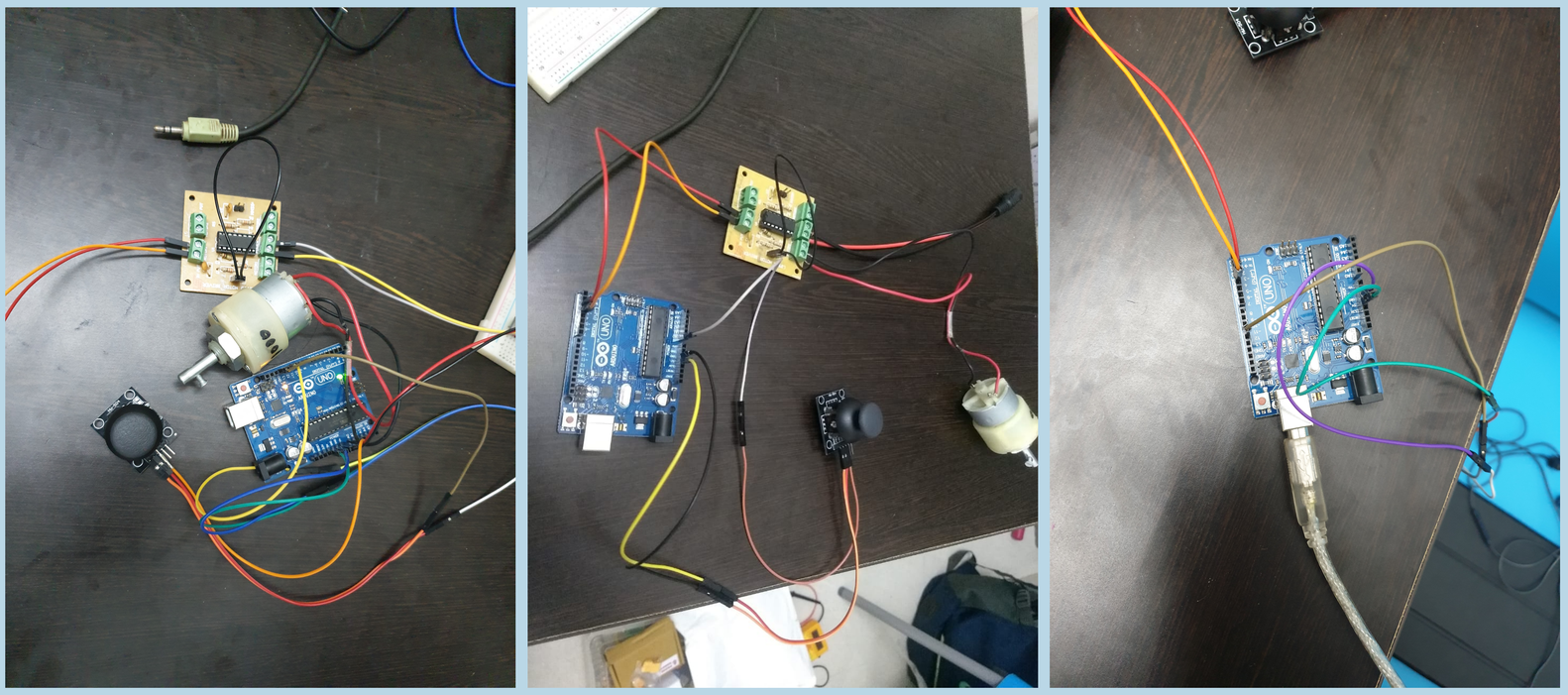
Our current prototype is the a 3-D printed rig, developed to demonstrate the design and working of final commercial product.



Construction

The whole prototype is constructed in several parts and then carefully assembled together.

These electrical parts were carefully placed and waterproofed for real-life testing.



The electrical component includes:

- Micro-controller (Arduino): For controlling the bot
- DC Motors: Used for moving the bot
- Servo motors: Used for changing directions
- RF Module: For communication with bot
- Joystick: For controlling the bot
- Batteries: For powering the bot
- Motor driver: For powering the motors