

AI for Bharat Hackathon

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Team Name : ARJUN 2.0

Team Leader Name : ROSHAN GUPTA

Problem Statement : WATER POLLUTION

Brief about the Idea:

- The River Cleaner is a compact floating robotic system designed to remove surface-level waste such as plastic bottles, bags, and other floating debris from rivers and lakes.
- It operates using a motor-driven collection mechanism and can be remotely controlled, making it suitable for polluted water bodies where manual cleaning is difficult.
- The solution is low-cost, scalable, and helps reduce water pollution, protecting aquatic life and improving overall river health

Your solution should be able to explain the following:

- **How different is it from any of the other existing ideas?**
- **How will it be able to solve the problem?**
- **USP of the proposed solution**
 - The proposed River Cleaner is a compact, low-cost, and modular floating robotic system designed specifically for small to medium rivers, lakes, and canals, where large industrial river-cleaning machines are not feasible.
 - Unlike existing river cleaning solutions that are large, expensive, and require heavy infrastructure, this solution focuses on portability, easy deployment, and affordability.
 - It can be operated by a single person and does not require permanent installation or skilled labor.
 - The system efficiently collects floating solid waste such as plastic bottles, bags, and thermocol, which are the primary contributors to visible river pollution.
 - By removing waste at the surface level, it prevents plastics from sinking or breaking into microplastics, thereby protecting aquatic life.
 - USP (Unique Selling Points): Low-cost & scalable design suitable for local municipalities and small communities Modular structure for easy maintenance and quick part replacement Energy-efficient operation with minimal power consumption Remote/semi-autonomous control, reducing human exposure to polluted water
 - Best features like GPS tracking, AI-based waste detection, and solar charging, Aquatic animal safety

List of features offered by the solution

It is always better to add a few visual representations (drawings/sketches/illustrations etc.) to your presentation, it adds to the power through which it reaches the audience.

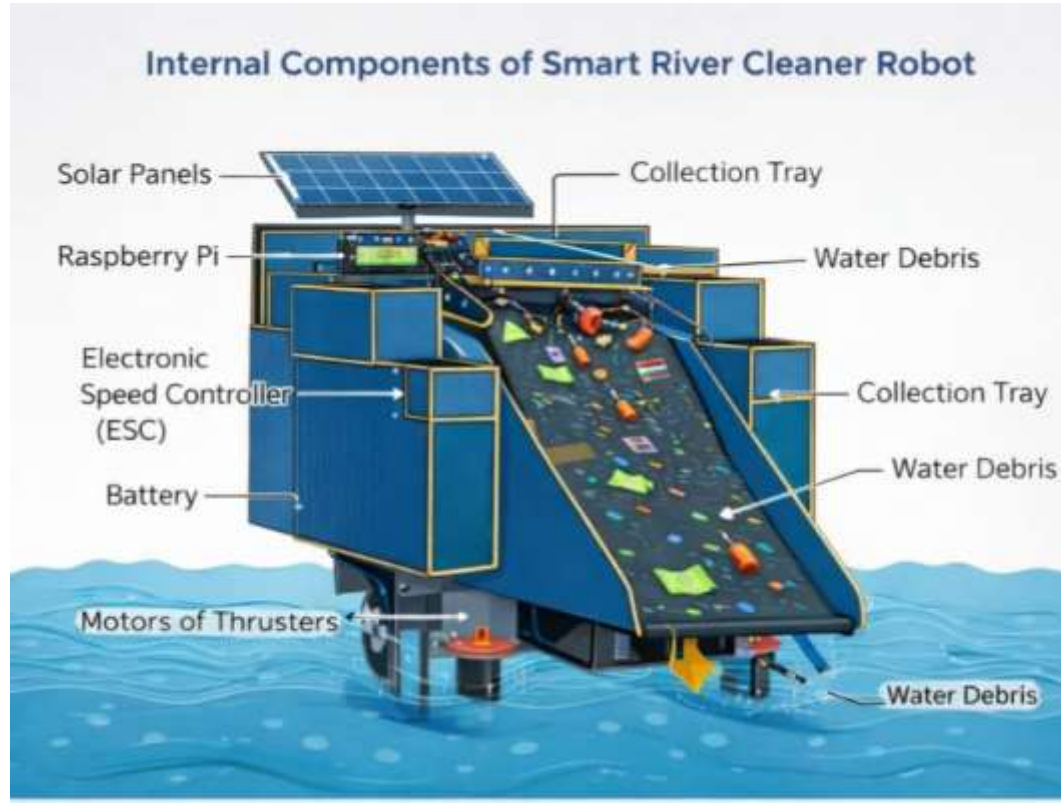
1. GPS
2. LOAD CELL
3. Aquatic animal safety
4. Floating robotic platform
5. Motor-driven waste collection mechanism
6. Remote / semi-autonomous operation
7. Low-cost and energy-efficient design
8. Modular and portable structure
9. Eco-friendly, chemical-free cleaning
10. Scalable deployment capability
11. AI and IoT integration

Process flow diagram or Use-case diagram

Add a flow diagram or a use case diagram or an architecture diagram.



Wireframes/Mock diagrams of the proposed solution (optional)



Architecture diagram of the proposed solution:



Technologies to be used in the solution:

1. Robotics and Embedded Systems
2. Microcontroller / Single Board Computer
3. Motors and Electronic Speed Controllers (ESC)
4. Wireless communication technology
5. Mechanical waste collection system
6. Battery and power management
7. CAD and 3D printing for prototyping
8. AI and cloud integration

Estimated implementation cost (optional):

Add as per the requirements for the hackathon:

- The solution will be developed and adapted according to the specific requirements, guidelines, and evaluation criteria of the AWS AI for Bharat Hackathon, with flexibility for AI and cloud-based enhancements.

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Thank You

