IOT BASED AUTOMATIC LAKE CLEANING BOAT

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Introduction: Lakes are important to the earth’s landscape. They are extremely valuable ecosystems and provide a range of goods and services to humankind. They are not only a significant source of precious water, but extend valuable habitats to plants and animals, moderate the hydrological extreme events (drought and floods), influence microclimate, enhance the aesthetic beauty of the landscape and offer many recreational opportunities. Lakes have a very special significance in India. Current institutional arrangements for the protection of lakes in India.

In urban areas, water bodies are owned by land owning agencies. However, their survival and protection depend on the role of a number of other institutions/agencies such as ministry of water resources, Ministry of Environment and Forests, agriculture ministry, fisheries ministry and other local authorities, i.e., municipal corporations, development authorities, tourism department, water supply boards, etc. At the Central Government level, Ministry of Environment and Forests (MoEF) plays an important role in restoration of lakes in India under its initiative called National Lake Conservation Plan (NLCP) developed in 2001 specifically for the protection and management of lakes.

Our purposed system is of automatic detection of wastes in water. Hence we are using ultra sonic sensors for the detection of objects. Conveyer belt is used to take out wastes from the water to box in boat. Hence to make less human interference we are proposing this type of system.

Objectives:
- Collect many types of wastes: Our product should not be restricted to collect only one type of waste. 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.
- 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.
- Easy disposal of waste: Collected waste can be easily disposed.
- It must be stable: To make the product stable it must get through with proper design calculations.

Methodology:
Our model consists of conveyer belt which takes solid wastes from the water conveyer belt is carrying medium of belt conveyer system that consist of two or more pulleys that rotates. It picks the waste and deposit it inside the storage tank. 12V DC motor with 60 rpm power is given to drive pulley. As there is a need of Wi-Fi connection on the boat and also boat is powered by solar panel. GPS module is installed
on the boat to track its location. Ultrasonic sensors are used to detect the object. Temperature sensor is used for the detection of changes in climate.

Results and Conclusions:

This basis discuss about the water body cleaning that actuated using three DC motors. This project is implemented using Arduino and atmega microcontroller which was programmed using Arduino IDE.

As a conclusion, all objectives for this project were managed to achieve. The objectives are:

- The boat collects many types of wastes from the water surface.
- Less human interference is involved for controlling the boat.
- The collected waste can be easily disposed.
- The movement of the boat is very stable.
- It provides safety for the user.
- The boat is Environmental friendly as it uses the solar energy.

Scope for Future Work:

This project is successfully designed, implemented and tested. The main function for this project was achieved. Everything that we learned was applied in this final year project. Students can improve the skills to make mechanical and electronics designs that very useful after graduation and in working life after that.

For the next boat development, the boat can be reconstructed with some modification to improve the abilities and to provide benefits in future. The design of the boat can be improving, by segregating waste separately and the conveyor belt design can be improved. Another technology that can be added is vision system.