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ROW-BOAT:Microcontroller based vehicle for collecting floating debris

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ABSTRACT :

Water pollution is one of the major problem we are facing today and the reason for this are humans. Many have considered water bodies as the easiest source for dumping the plastic wastes, this causes generation of number diseases. For cleaning the water bodies such as pond, lake we have developed a debris cleaning machine called row-boat (micro-controller based vehicle for collecting floating debris). Our machine has simple & less cost design , specially designed to collect floating waste. It is a battery powered machine with the ability to recharge, DC motors for movements and conveyor action and it can be controlled using web browser over long distance using IoT

Keywords: Micro-controller, IoT, Debris, Web browser ,DC Motors.

INTRODUCTION

Coastig flotsam and jetsam in seas, waterways and other water bodies has ended up an expanding environmental issues. From plastic packs and bottles to larger items like angling nets and oil rings, the accumulation of this flotsam and jetsam postures genuine threats to marine life, damages ecosystems, and impacts human health .To address this problem researchers and engineers have been working on developing unused advances and procedures for removing coasting flotsam and jetsam from our waterways. One promising approach includes using microcontrollers to plan and send vehicles capable of collecting and transporting to shore or other assigned areas for appropriate disposal .In this report, we will display the design and development of a microcontroller based vehicle for collecting floating debris. The motto of the machine is planning and developing a floatable flotsam & jetsam collector utilizing microcontroller that can effectively explore through water bodies and collect scattered flotsam and jetsam.

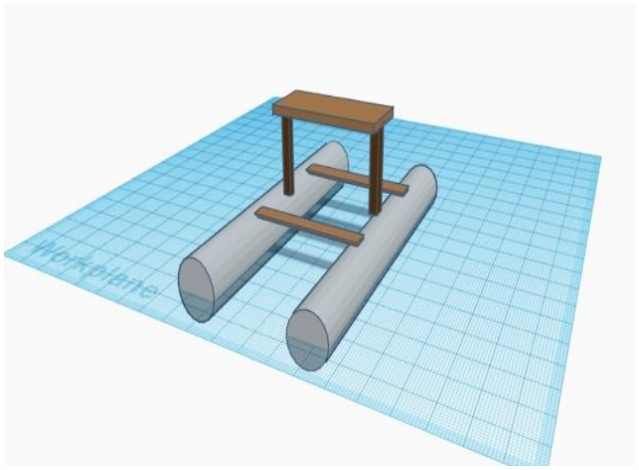
Water contamination is expanding gradually & getting to be a genuine problem for rivers, lakes etc. Contamination primarily comprise of impurities like waste water debris, plastic packs, etc. The impurities primarily influence the wellbeing of human beings and also aquatic animals. Usually, conventional strategy of using manpower is used for collection of plastic and all other types of impurities floating on water, this method require huge man power ie; this is risky ,costly and time consuming method.IoT operated floating cleaning machine is efficient than conventional method and also eco-friendly. This machine is IoT worked, and we can control it anywhere with the assistance of web server. GOI has taken charge to clean river and lake due to increment in water contamination & invest huge amount for cleaning /waste collecting ventures. This machine is best for diminishing water contamination in water bodies.

MOTIVATION

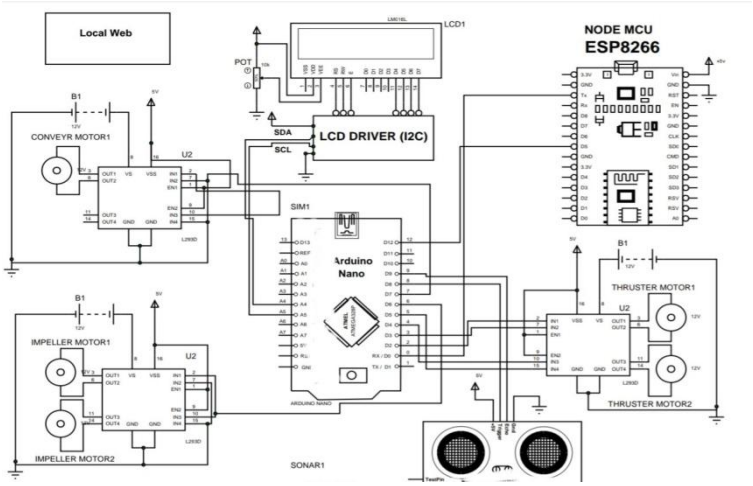
Embarking on a river cleaning machine project can be driven by a deep sense of environmental responsibility.It provides a opportunity to contribute towards preserving aquatic ecosystem , protecting wildlife, and ensuring clean water resources for communities additionaly, the project allows you to apply engineering and innovation skills to address real world environmental challenges , fostering a sense of accomplishment and making a positive impact on the planet. In water bodies , posses a significant threat to marine life and ecosystems. Developing a vehicle capable of collecting the debris, this contributes to environmental conservation effort.

PROPOSED MODEL

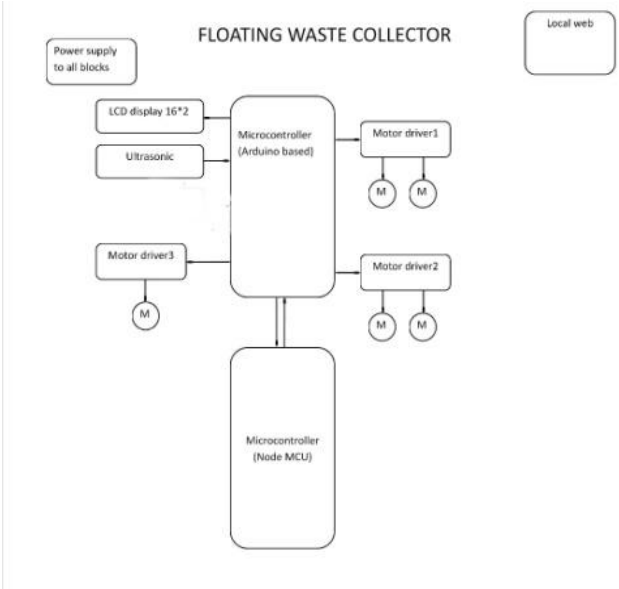
MECHANICAL DESIGN



CIRCUIT DIAGRAM



BLOCK DIAGRAM



4. RESULT AND DISCUSSIONS

The Row-boat is a microcontroller based machine which is used to collect waste from water surfaces . To control directions and to know the bin status ie;normal/abmormal a we local web browser is used wherein the instructions are given in st chara and is given as input to nodeMCU where it converts them into integers values ,the integers are assigned tasks .direction control and conveyor control is operated using the instruction given from the web browser such as forward ,backward, right ,left and stop action. The impellers makes a streamline to make it easier for thr machine to collect the floating debris ,then the conveyor collects and drops it in the bin. A ultrasonic sensor is placed above the bin to know the bin status ie; a threshold value is assigned ,when the bin exceeds the threshold value the bin status changes to abnormal, which means the bin is full. The machine is operated using 4 lithium ion battery which are rechargeable and hence it makes this project user friendly as well as cost effective.

CONCLUSION

In this paper floating debris collector model proved to be able to gather the waste. Navigation control of forward, reverse, right ,left was successful using a web browser .In future this machine can automatically function without a human .The model can be further improved by using image recognition technique to classify wastes. A solar panel can be used to support power requirements of DC motors.

REFERENCES :

[1] S. N. Chaudhari, A. S. Botre, T. S. Wable and M. Gawande, "Water Surface Solid Waste Cleaning Robot For Ponds," 2023 2nd InternationalConferenceforInnovation inTechnology(INOCON),Bangalore,India,2023,p p.13,doi:10.1109/INOCON57975.2023.1010 1026.[

2] Karthik, C. Manikanta, V. Vamsi, K. S. Reddy and Bala,"Autonomous River Cleaning System using GPS Technology," 2023 International Conference on Sustainable Computing and Data Communication Systems (ICSCDS), Erode, India, 2023, pp. 10001003, doi: 10.1109/ICSCDS56580.2023.10104610.

[3] A. W. Mun Wai, C. J. Long, K. H. Shen, O. J. An, H. Nugroho and I. Rusydi, ",Fuzzy-based Control System of Unmanned Surface Vehicle (USV) for Floating Garbage Collection" 2022 IEEE International Conference on Artificial Intelligence in Engineering and Technology (IICAIET), Kota Kinabalu, Malaysia, 2022, pp. 1-6, doi: 10.1109/IICAIET55139.2022.9936835.

[4] nurul Anis ,Syahira KamarudinIli ,Najaa Aimi, Mohd Nordin ,Hussein ,Dalila Misman,Nurulaqilla Khamis "Development of Water Surface Mobile Garbage Collector Robot" DOI:10.47059/alinteri/V36I1/AJAS21076/resear ch gate.

[5] G. SaiTeja and P. S, "Design and Simulation of an Autonomous Surface Vehicle for Trash Collection using ROS," 2021 IEEE 9th Region 10 Humanitarian Technology Conference (R10-HTC), Bangalore, India, 2021, pp. 1-6, doi: 10.1109/R10-HTC53172.2021.9641589.

[6] C. Patil, S. Tanpure, A. Lohiya, S. Pawar and P. Mohite, "Autonomous Amphibious Vehicle for Monitoring and Collecting Marine Debris," 2020 5th International Conference on Robotics and Automation Engineering (ICRAE), Singapore, Singapore, 2020, pp.