Hydrobot - A Smart Rescue Bot

Shashank M Gowda
Assit.prof ECE department
Yenepoya institute of engineering

Hithendra Shettigar
8th sem ECE department
Yenepoya institute of engineering

Prathveesha Kumar
8th sem ECE department
Yenepoya institute of engineering

Prasanna Kumar
8th sem ECE department
Yenepoya institute of engineering

Abstract **- This project addressed the problem of rescuing people who have fallen overboard at sea. Large vessels with slow response times and limited turning capabilities are poorly equipped to handle man overboard cases. To overcome this problem this bot designed in such a way that this bot track the location of the band immediately send the alerting message to lifeguard. This Rescue-Bot shall have sufficient mobility and maneuverability in a seaway to enable persons to be saved from drowning which is helpful in places where human cannot reach easily like flood affected areas, tourist places etc. It is also possible to reconfigure and customize the proposed robot according to our needs and use it in various fields.**

Keywords: surveillance, rescue bot, real time, monitoring

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I. INTRODUCTION

For centuries, one of the greatest fears of all seafaring people has been the prospect of falling overboard at sea. Thankfully, today there are various technologies that address this issue. Different forms of rescue devices include trailing lines, man overboard detection transmitters, chase boats, rescue buoys and life rings. One of the problems with these devices is that they only work for specific situations and certain sized vessels. Due to the limitations of the aforementioned man overboard rescue devices, there is a need for a new device or product that is capable of saving the lives of persons operating in this poorly protected niche. Due to the dynamics of larger vessels and their respective handling capabilities, it becomes increasingly difficult to both monitor and protect the crew on board. Because of the vast size of larger vessels, there is a greatly increased chance that a person gone overboard will go unnoticed for several minutes. This is particularly the case for cruise ships and naval vessels. This project addressed the problem of rescuing people who have fallen overboard at sea. The large amount of time it takes for a vessel to turn around puts a man overboard in great risk. To solve this problem, a robotic rescue boat was developed with support from systems for the vessel and victim that autonomously help pilot the rescue boat via GPS, a magnetic compass, and a project specific terminal location system. The same system also supports the return of the victim to the vessel.

II. PROBLEM STATEMENT

When flood occurs water overflows or inundates land that's normally dry. Most common is when rivers or streams overflow their banks. Excessive rain, a ruptured dam or levee, rapid ice melting in the mountains, or even an unfortunately placed beaver dam can overwhelm a river and send it spreading over the adjacent land called a flood plain, in this case if a person can't swim or is tired of swimming for a long time. To overcome from this problem this bot designed in such a way that this rescue boat will track the location of the band immediately send the alerting message to lifeguard. This Rescue-Bot shall have sufficient mobility and maneuverability in a seaway to enable persons to be saved from drowning by giving life saving jacket.

III.WORKING MECHANISM

The Hydro-Bot is controlled manually using transmitter. The battery is used to turn on the motor for the movement of bot through Electronic Speed Controller (ESC) with help of RF signal fetched by receiver from transmitter.

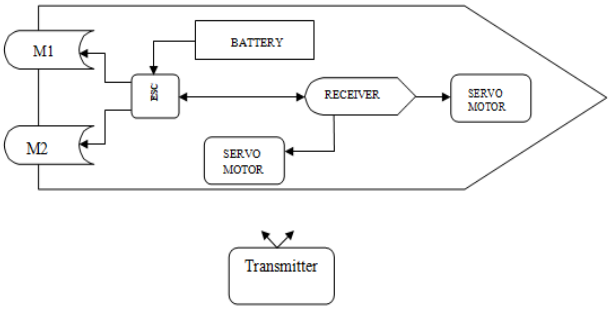

Fig 1: Block diagram of manual control Hydrobot

ESC is powered on by 11.1V from battery through which it drives two motor and it internally provides separate 5V supply to receiver. This supply is used to drive the servo motors.

Once bot reached the location of person, the transmitter send the signal to the receiver which switches the servo motor that releases the life saving kit.

Life saver band

This band is designed in such a way that it gives the current location of user through which lifeguard can track him immediately.

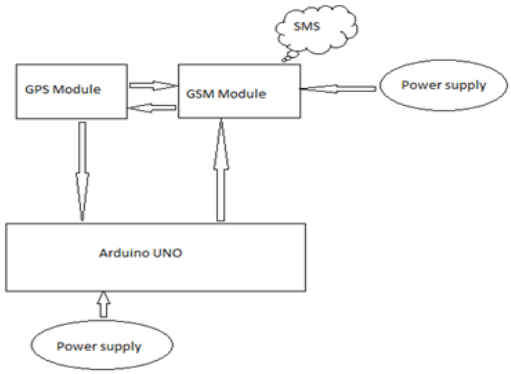

Fig 2: Block diagram of manual control Hydrobot

Mainly this band consists of Arduino, GPS and GSM module. GPS module is used to find the location and GSM module is used to send the location information to prescribed mobile number. These two modules are interfaced by using Arduino board. We designed in such a way that it contains two switches one for main power supply and another for emergency button. When user presses this button it sends the location information to the prescribed mobile number.

IV. FUTURE SCOPE

Rescue boat shall have sufficient mobility and capacity to enable persons to be retrieved from water. It saves passengers or user with the band by providing life saving equipment. This boat has to be designed such that it can be controlled manually or fully automatic. During flood it can be controlled manually where we are not able to track the GPS location . following ideas can be implemented in future are follows

- Camera was installed on the boat for monitoring. The live streaming of the camera can be seen on TV as well as on laptop.
- The motion sensor is also installed on the boat which will detect the humans if it comes near the boat. The sensors emit rays. It will work on the base of the infrared rays.
- In future we can use 24 channel receivers which cover large distance.
- We can implement automatically by receiving signal directly from band to boat and boat itself drive to the place to rescue him.

V. TESTING AND RESULT

The complete experimental set of Hydrobot-A smart rescue bot is shown in below Figure 3

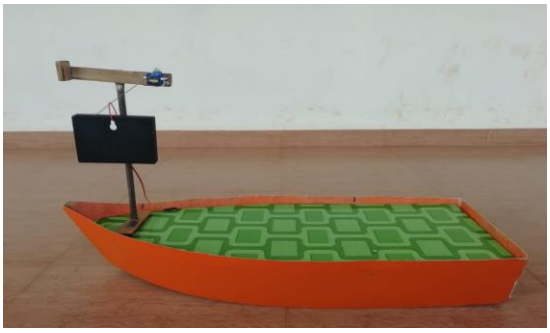

Fig 3: Hydrobot

The boat is molded using glass fiber. The glass fiber is stronger than wood, the hulls of the boat may be made thinner and area inside the boat larger and it is lightweight. Total length of boat is 82cm, width is 30cm and height is 14.5cm. This design is suited for floating and successfully floated.

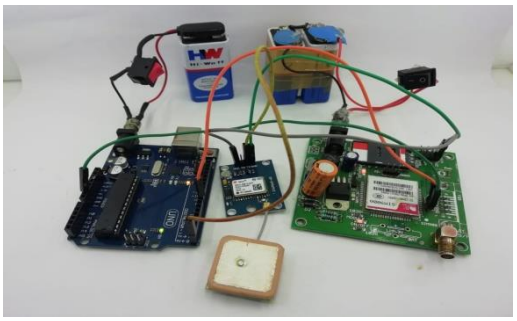

Fig4: Internal circuit connection of life saver band.

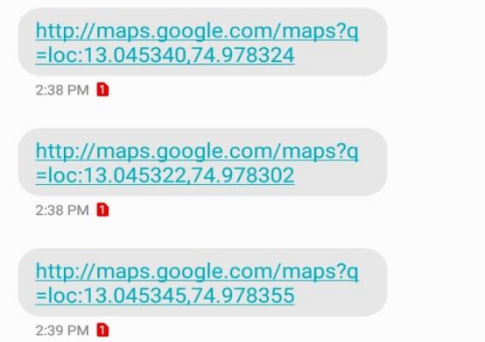

Fig5: Output location of internal circuit diagram

Internal circuit connection and manual control of boat is shown in below Figure 4. Circuit connection is rigged up and tested the boat in lake and it covered the distance of 1km.

V. CONCLUSION

Finally Water is life. There is no denying. But water is also a source of many disasters and dangers. People get stuck in a water surrounded environment. So it is an

unavoidable issue to rescue the people when they fall in such situation. One kinds of automated rescue mission can be possible in those cases that are hydrobot. This Water vehicles shows better efficiency for developing countries in terms of economy and complexities.In our project we tested boat in lake and finally it saved user from drowning successfully by providing the life saving buoy.

VI. ACKNOWLEDGMENT

I wish to express my sincere gratitude to Prof. Gangadhara H.O.D. of Bachelor of Engineering (Electronics) Yenepoya Institute of Technology Moodbidri. for providing me an opportunity to do my paper work on "HYDROBOT- A Smart Rescue Bot ". I sincerely thank to my internal guide Prof. Shashank M Gowda, for their valuable help and guidance in carrying out this paper work.

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