iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** III **Month of publication:** March 2020

DOI:

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue III Mar 2020- Available at www.ijraset.com

Self - Stabilizing Boat by using the Principle of Gyrostabilizer

Parthasarathy B. M[1], Abhijith S[2], Kavya M.S[3], Badeea Mohammed Ibrahim[4]
[1, 2, 3, 5]*Student, Dept –ECE ,College of Engineering, Attingal, Kerala*

Abstract: ***Every job has its own risks and importance. One of the most risky jobs in our society is fishing. The climatic conditions of oceans are unpredictable. There are many accidents being reported in deep oceans on every month. Most of these accidents occur due to the instability of boats in ocean. Not much attention given towards the safety of fisherman and no efficient life saving mechanism to ensure their safety in these adverse conditions of oceans. This paper deals with maintaining the stability of small boat in the cheaper way. In this paper we introduce a system for achieving stability of boat by using the principle of gyrostabilizer. It also enables system to track the position of boat when the accident occurs by using GPS module and sending SMS using GSM module.***

Keywords: Gyrostabilizer, GPS module, GSM module, Stability, Accidents, Unpredictable.

I. INTRODUCTION

The life of each human being is important. Everyone is linked with land, water and air, either for transportation or occupation .There are many life saving mechanisms are use there in land including helmets and seatbelts. In air also there are air jackets and belts are used for save the life of human beings. But in water except the lifejackets there is no lifesaving mechanisms are exists in cheaper way. Reporting of accidents is increased in day by day due to the instability of boats and the unpredictable climatic conditions. Even though the accidents are occurred in deep oceans, there is no efficient way for communicate it with the concern authorities in shores. Even though some life saving mechanisms still exists but it is more costly. So it cannot be implemented in small fishing boats. By solving these issues we can assure the safety in the life of fisherman. In order to reduce the accidents in Deep Oceans, first we need to maintain the stability of boats. In this paper we propose the system to maintain the stability of boat by using simple gyrostabilizer. If the accidents are occurs beyond the stability in oceans, we can track the position of boat and sends this location to the concern authorities within no time. In this way we can save the life of fisherman to a particular .

II. PROPOSED SYSTEM

The block diagram of the proposed system is shown in figure1. Initially there exists small tilt to the boat which is offered by the waves as the boat moves forward. This system is initialized with the threshold roll offered by the boat in water. The gyroscopic sensor is used to calculate the roll of the boat. If the angle of roll to the boat is within the threshold value of angle, the system stabilizes by using the gyrostabilizer. Otherwise message regarding accident along with the position of boat will be send by GSM module .

Figure 1: Block Diagram of proposed system

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue III Mar 2020- Available at www.ijraset.com

Gyrostabilizers consist of rotating flywheel, BLDC motor and servo motor and control mechanism. In this project we use Brush Less DC (BLDC) motor to rotate the flywheel at the rate of 10000 rpm and Electronic Speed Controller (ESC) to control the speed of gyrostabilizer. BLDC will exhibit longitudinal motion, at the same time two servo motors are also attached with the flywheel for to and fro motion in gyrostabilizer. By using breaking mechanism, we can employ the locked and unlocked positions of gyrostabilizers.

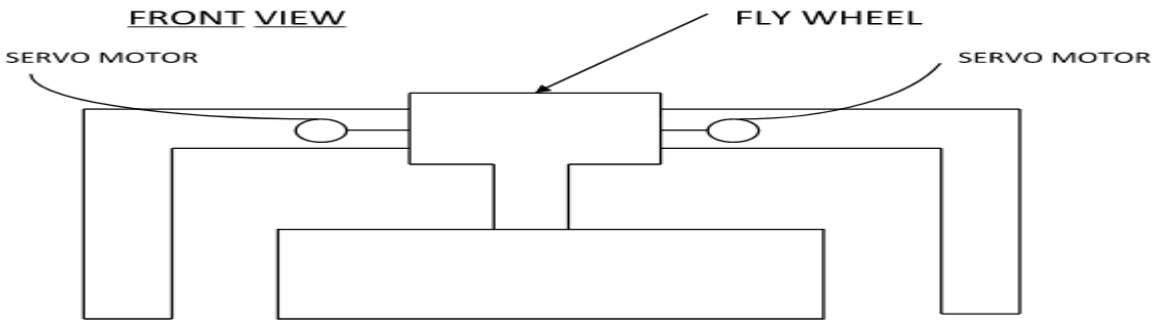
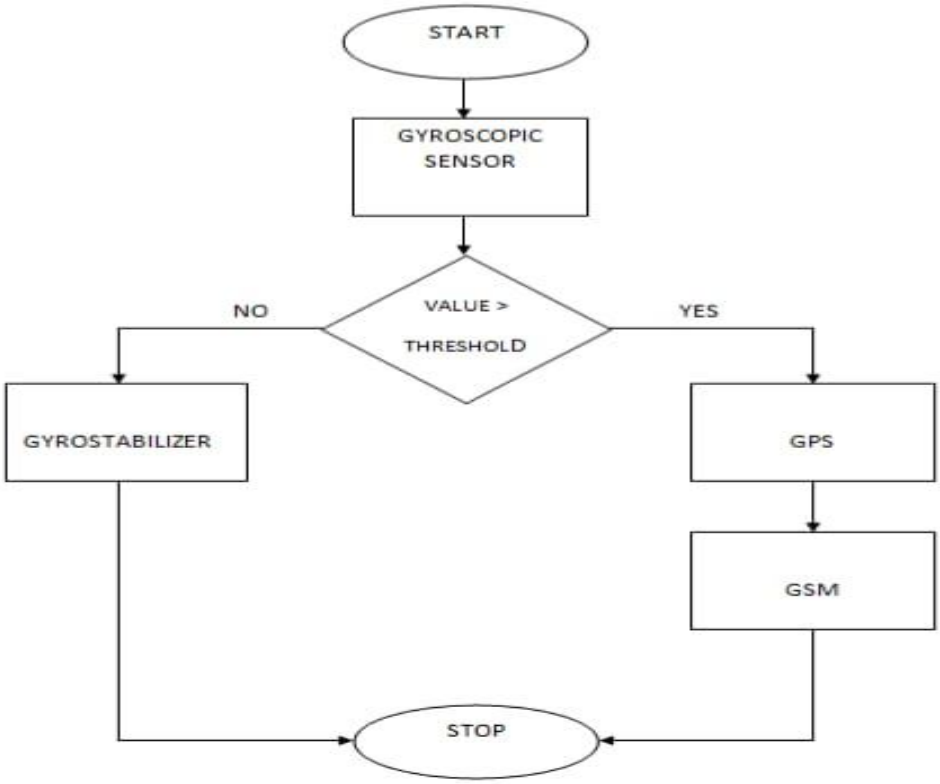


Figure 2: Front view of gyrostabilizer

The front view of gyrostabilizer is shown in figure2.

When the flywheel rotates inside the gyrostabilizer, it generates a torque and can stabilize the boat in opposite direction against the tilt of the boat. If the roll of boat is beyond the predefined threshold , then GPS module is used to track the position of boat and by using GSM module we are able to send the messages (exact position of boat) to coastal guards or concerned authorities.

FLOW CHART



ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue III Mar 2020- Available at www.ijraset.com

III. CONCLUSIONS

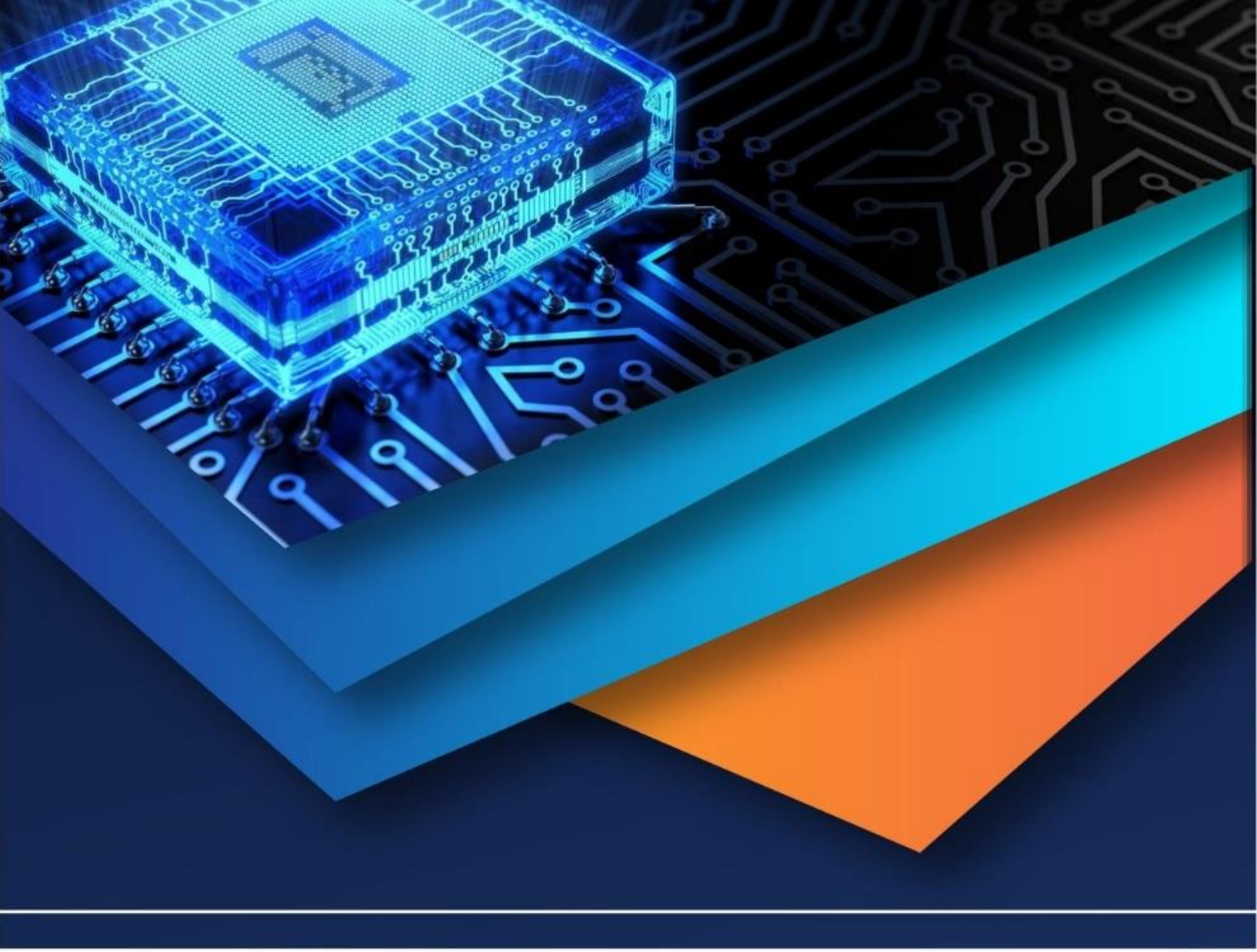
The life of fisherman in the deep oceans is very risky one. We do not pay much attention to improve the life condition of fisherman in oceans. Our project is a lifesaving mechanism to save the life of fisherman. Most of the accidents occurs in deep oceans are due to the instability of boat. So by implementing our project it is very useful to fisherman who goes deep into the ocean to save their lives and to communicate with concern authority in a cheaper way.

IV. ACKNOWLEDGMENT

Our first acknowledgment is to god who gave us full strength to complete our project. we also extend our acknowledgment towards our guide Minikumari G, our HOD Anuraadha P.V ,our college principal Dr. Sunil sir and our colleagues who give technical supports to complete this project.

REFERENCES

[1] Popelka "A self STABILIZING platform" International Carpathian Control Conference (ICCC), vol. 15, 2014, pp. 458-462.
[2] VinayakTripathi, RichaGupta :Self-Stabilizing Platform Using Mpu 6050 - a Boon for The Society To Reduce Accidental Death in:International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249-8958, Volume-8 Issue-4, April 201.
[3] Vittorio M. N. Passaro 1,* ID ,AntonelloCuccovillo 2, Lorenzo Vaiani 2, Martino De Carlo 1 and Carlo EdoardoCampanella 1,2 :Gyroscope Technology and Applications: A Review in the Industrial Perspective in : MDPI Received: 21 August 2017; Accepted: 29 September 2017; Published: 7 October 2017.
[4] Nicholas C. Townsend ,Ramanand A. Shenoi : Gyrostabilizer vehicular Technology : Research Gate, Article in Applied Mechanics Reviews · January 2011.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY