

CHAPTER-1

INTRODUCTION

The development and deployment of Autonomous boat sailing is possible by the effective combination of appropriate new and novel techniques that will allow for a number of applications have been successfully completed. Autonomous robots have been successfully demonstrated in a number of applications, including planetary and underwater exploration. While the use of unmanned buoys for ocean observation is well established, the use of unmanned systems capable of long term purposeful navigation is still in its infancy. A sailing vessel will only require minimal electrical power to adjust its control surfaces and power on board computers.

Sail propelled vessels thus prove an attractive prospect for investigation. A range of model sailing dinghies and very small cruising vehicles were examined, but a number of difficulties arise with each. Sailing dinghies will also require drastic modification to make them self-righting as well as requiring a modified rig to allow reliable automatic control. Sailing robots and were able to demonstrate basic working control systems. The concept is the autonomous sail propelled robot for ocean observation will measures the sea shores, depth of oceans, rescue and also give the direction.

Ocean Exploration and Navigational Research is leading efforts by supporting expeditions with computer vision techniques have shown potential for Sailboat robots developed in order to make measurements at the surface. The marine environment presents an almost ideal test-bed for the evaluation and development of robotic technologies.

Robot sailing is a challenging task in both building and controlling the boat therefore it brings together many different disciplines of mechanical, electronics and software. The autonomous manoeuvres sailing robot for oceanographic research is used to explore all the details on the surface of the water. This robot is used for locating the position of the system using GPS & GSM, detects metals present in the ocean, and measures the depth and boundaries, used for surveillance and rescue operation.

1.1 OBJECTIVE

The main objective of the project is designing a “Swumanoid: An Autonomous Manoeuvres Sailing Robot for Oceanographic Research”. The ultrasonic waves are sent until it hits an obstacle. The range of the sensor is 4-5m. When the obstacle is detected the pick and place mechanism starts and gives a message saying “BLOCK AHEAD” is displayed. And the sailing robot is made to move left, right, back and front.

1.2 PROBLEM STATEMENT

In existing systems we have humans using the boat for different expeditions which is under harsh environments with no consumable food and other basic requirements. Humans are also succumbed or prone to diseases, fatigue, and mental stress. Humans cannot survive in deep jungle river and human vision is limited up to a certain distance.

1.3 METHODOLOGY

Here ARM7 and 8051 along with wireless based communication is interfaced. The DC motors are used to rotate the arms of the robot to catch habitats. There is an extra wireless camera attached to send the feeds to the base.

The GPS and GSM attached send necessary details across of location and events. The proposed projects explains the sailing robot explores in interpretation of video footage, the identification of sailing features, human-robot interaction, vehicle control, position estimation and mechanical design.

Key applications for this vessel are the assessment of marine habitats and complex maneuvers. An idea presented has been with a Robotic vehicle which activates automatically and manually control the moving object in the water the robot will capture and sends the information to the pc (personal computer) which uses advanced image processing technology and compares relevant images by identifying underwater features which will follow the object present in the surface of ocean.

Radio frequency [RF] has a frequency range about 3Hz to 300GHz. This range corresponds to frequency of alternating current electrical signals used to produce and detect radio waves. Since most of this range is beyond the vibration rate that most mechanical systems can respond to RF usually refers to oscillations in electrical circuits or electromagnetic radiation.