

Semiautonomous Underwater Monitoring System

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Abstract: - In one of the most rapidly advancing field in technology spectrum in robotics. The need of system to work to hostile environments, those human cannot work easily like the deep sea environment or natural disaster affected environment led to the development of remotely operated robot. Underwater robot are nowadays used by treasure hunter, underwater forensics, rescue workers, fisherman, Nature videographers and so on. The project has been develop for surveillance purpose. It can research to carry out underwater operation.it capture underwater defect, leakage, temperature and send high resolution image to user.

Keywords: - Arduino, Raspberry pi, Dc motors, LED, camera, propeller.

I. INTRODUCTION

The undersea operation are a great application for robot to replace human. Working is both dangerous and difficult for human. Underwater robot can record data that would be difficult for human or gather. This project perform underwater operation easily and send underwater images, temperature, defects to user. These technology deals with automated machine that can take place of human in dangerous or manufacturing process or resemble human in appearance, behavior or cognition. Robot are employed in various places, starting from industries to medical field.it underwater remotely operated robot that can transmit data such as live video and picture from under the water to an end user as it moves through the environment.

Working:

The figure 1 shows semiautonomous underwater system uses Arduino. Robotic unit consisting of array an sensor and camera which is moveable around its axis and also vertically. Raspberry pi is used for video processing and sending the video to the user through the Bluetooth is used for communication between Arduino and raspberry pi (ARM processor). Motor driving circuit are used for operating motor. The motor manipulated by a programmable control board, which can communicate with the smartphone through either USB cable or short range wireless link such as Bluetooth. The raspberry pi is a credit card sized computer that plugs into your TV and keyboard. It also plays high definition video. Raspberry pi has a strong processing capacity because of using the ARM11 architecture and Linux based system.

II. MATERIAL AND METHODS:

2.1 System blocks diagram and working:

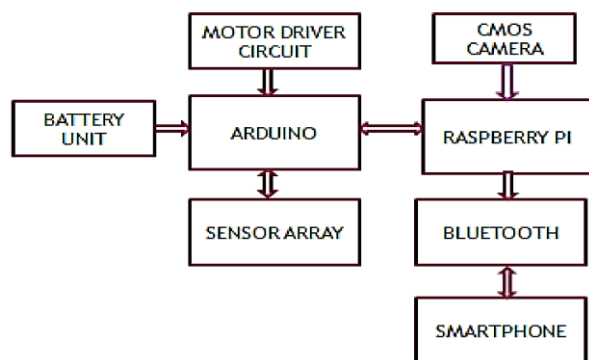


Figure 1 Block Diagram

2.2 Technical data of hardware design:

Component	specification
Raspberry pi(model B+)	Chip Broadcom BCM2835 &ARM11 SOC core architecture
Arduino	Microcontroller ATmega328
Bluetooth	HC-05
DC motor	3-5v DC
Accelerometer	ADXL335
Ultrasonic distance sensor	HY-SRF05

Table 1.0

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2.3 Flowchart:

Those flowchart real time data monitoring by aquatic robot. The main purpose of ultrasonic sensor is to detect object in aquatic environment. If the object is detected then accelerometer display is XYZ co-ordinates. After confirmation of debris microcontroller (ATmega328) decide movement (left or right) of robotic using DC motor and display message.

III. RESULT AND ANALYSIS



IV. CONCLUSION

The model of the project can be used for monitoring temperature variation, capture leakage, defect, in underwater. It can be used for monitoring and controlling pollution in water. It can be used for underwater rescue operation. It can be for defense as well as civilian surveillance operation. These robot sense the valuable metal which are lost under water. It can be also employed for under water rescue operation which are impossible for human. With this robot it is possible to keep a constant check on our borders for any enemy movement. Thus this robot can be of high advantageous purposes.

V. FUTURE SCOPE

The feature it would be beneficial to have higher resolution cameras to allow the pilot to see the things clearly. Having HD, 3D, stereoscopic camera would be especially beneficial as it would allow for clear view to the water while giving the pilot a better feel for how far away he is from item during the mission.

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