

MULTIFUNCTION ROBOT

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Abstract: Many defense organizations use robots in dangerous conditions where human cannot reach. These bots consist of various sensors, wi-fi module for wireless communication and rpi camera for live streaming.

Index Terms: Wi-Fi Module, rpi-based camera, Android App, Sensors.

I. INTRODUCTION

The system consists of rpi cam, HCSR04 sensor, Proximity sensor, Temperature sensor, Gas sensor, dc motors, battery for robotic assembly and Wi-Fi module for wireless communication between RPI system and android phone. The proposed robot will continuously monitor for various functions of sensors and live video streaming using android app. As soon as it detected the metal it will stop robot through android app via Wi-Fi esp8266 connectivity. Here video streaming is done with the help of camera facility of android phone because of which we can be able to monitor the actual field condition from remote location. The various parameters received from respective sensors analysing particular conditions are sent to the web server the microcontroller via Wi-Fi connectivity.

II. EXISTING SYSTEMS

ARM7 Microcontroller:

The ARM7 is a low power general purpose 32-bit RISC microprocessor macro cell for use in application or customer-specific integrated circuits (ASICs or CISCs). It's simple, elegant and fully static design is particularly suitable for cost and power sensitive applications. The ARM7's small die size makes it ideal for integrating into a larger custom chip that could also contain RAM, ROM, logic, DSP and other cells.

Proximity sensor:

Proximity sensor detects the presence or absence of objects using electromagnetic fields, light and sound. There are many types, each suited to specific applications and environments.

Gas sensor:

We used the Liquefied Petroleum gas sensor. We can use MQ-6 for detect gas concentration anywhere from 200 to 10000ppm. This gas sensor has a high sensitivity and fast response time there for we used. The sensor's output is an analogy resistance.

Ultrasonic sensor:

HC-SR04 ultrasonic sensor is a 4 pin module, which has supply pin, ground and for transmitting and receiving the signal. Used to measure distance.

Wi-Fi Module (ESP8266):

This module is used for wireless communication between the object and user. It is compact as well bulky so is costlier.

Buzzer:

When gas is detected it turns ON.

DC motor:

A DC motor is an electric motor that runs on direct current (DC) electricity. It is used for the movement of wheels.

Power supply:

We have used battery for supply, which provides 12V dc to the power supply circuit, now it is converted to 3.3V and given to controller.

III. METHODOLOGY:

BLOCK DIAGRAM: -

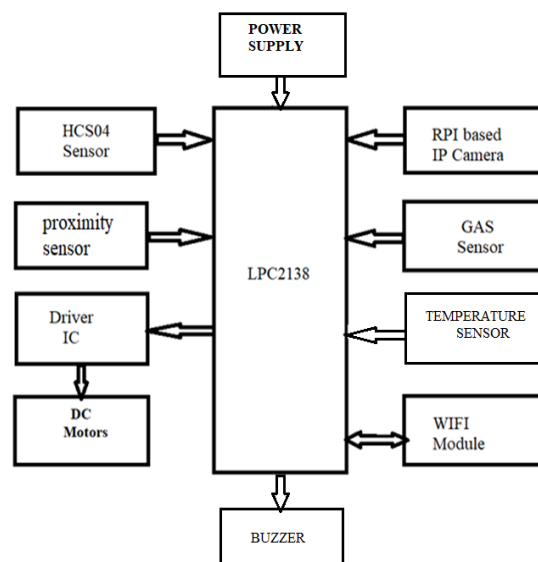


Figure 1: Block diagram of Multifunction Robot

DESCRIPTION: -

It consists of LPC2148 controller, various sensors like HCSR04 ultrasonic, Proximity, Gas, Temperature, sensors for various functioning and Wi-Fi Module for wireless programming through rpi-based camera using Android App, for controlling and monitoring several functions.

BRIEF WORKING:

The system consists of rpi-cam, HCSR04 sensor, Proximity Sensor, Temperature Sensor, Gas Sensor, DC motors, Battery for robotic assembly and Wi-Fi module for wireless communication between RPI system and Android phone.

The proposed robot will continuously monitor for various functions of sensors and live video streaming using Android App. As soon as it detects the metal it will stop robot through Android app via Wi-Fi ESP8266 connectivity.

Here video streaming is done with the help of Camera facility of Android phone because of which we can be able to monitor the actual field condition from remote location. The various parameters received from respective sensors analyzing particular conditions are sent to the web server by the microcontroller via Wi-Fi connectivity.

IV. OUTPUT RESULTS

Thus, we have observed that are robot detects the presence of enemy, metal object ad harmful gases presented in war field area. All these parameters are displayed on android app using Wi-Fi and we are getting alarm when the metal is detected, to alert the operator. Live streaming of video is captured through camera.

V. FUTURE SCOPE

1. We can use RFID in future to detect identity of person.
2. for large applications.
3. Using high application sensors, for effective and accurate monitoring of the system.

VI. CONCLUSION

The proposed system is aimed towards the welfare of our infantry and the surveillance of warzone areas to minimize the casualties to a great extent. Our system will be able to detect hazardous gases at industries, home and display it in percentage (%). It uses Ultrasonic sensor to measure distance of the object and Proximity sensor to detect the metal. Also Temperature sensor and Gas sensor is used. Robot consists of Rpi-Camera for live video streaming and all the parameters are going to be displayed and android app using wireless communication, Wi-Fi system.

VII. REFERENCES

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