Fire Fighting Robot

PROJECT SYNOPSIS
OF MINI PROJECT-II

BACHELOR OF TECHNOLOGY

COMPUTER SCIENCE AND ENGINEERING

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ABSTRACT

The aim of our project is to detect the fire activity in the range of our sensor which is mounted on the robot ,after detection of fire it will also wipe out the firing location .So basically it is an IoT based project hence the automation is done using NodeMCU esp8266 for efficient working.

From this project we explain the implementation and designing of Fire-Fighting robot. There are four DC MOTORS used for motions. There are three FLAME SENSORS used for detecting the fire and ULTRASONIC SENSOR for detection of obstacle. Dc water pump is used to pump water to extinguishing the fire.

MOTIVATION

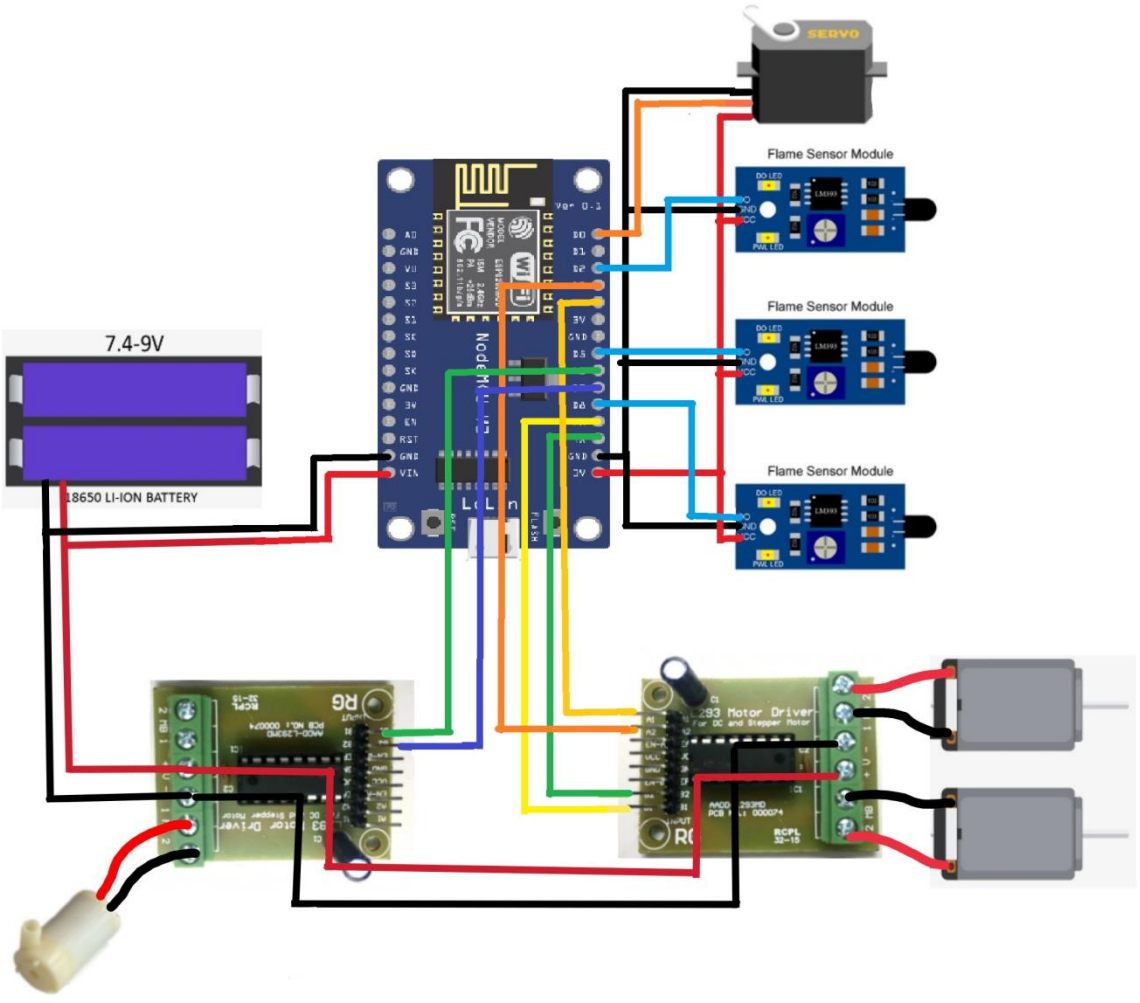
The motivation behind this project is that firefighter's death. Many firefighters are struggling to perform their duty which causes much death while on a mission and the circumstances related to each incident. Firefighters are our heroes and our sense of security in times of trouble. They put themselves on dangerous situations to protect us. At present, the world is moving toward the use of technologies software and hardware. This paper proposed a smart firefighting robot system which designed to detect the source of fire, extinguish it and increase the knowledge about fire behavior from incident area. This robot will reduce the risk of injury for firefighters and possible victims and decrease the monetary losses which increase considerably as fire duration increases. Consists of the ultrasonic sensor mounted on a servo motor for obstacles detection and equipped with flame sensors for detecting fire. It also makes use of liquid-tank and spray mechanism for extinguishing the fire. The spraying nozzle is mounted on a servo motor to cover maximum area. Liquid-extinguisher is pumped from the main tank to the nose with the help of a 12V pump. The whole system is programmed using NodeMCU board (ESP8266) which forms the brain of the system.

PROBLEM FORMULATION / OBJECTIVES

The main intention of this project is to design an automatic fire fighting robot for remote operation. The firefighting robot has a water tanker to pump water and spray it on fire. For the desired operation, NodeMCU SoC is used.
In the proposed system, a sensor is used to detect the fire and an ultrasonic sensor to detect any obstacle in front of it for controlling the movement of the robot in forward, backward, right or left directions. At the receiver side, five motors are interfaced to the NodeMCU microcontroller wherein four of them are used for the movement of the vehicle and the remaining one to place the arm of the robot.

METHODOLOGY / PLANNING OF WORK

Firefighting robot has been developed to find the location of fire and extinguish it. Firefighting robot has an ability to find the location by using flame sensor and ultrasonic sensor. The flame sensor is functioning to sense the location of fire while ultrasonic sensor is functioning to detect the presence of object around the Firefighting robot. Both sensors are connected to Node mcu esp8266, which controlled the movement of DC motor.



MATERIALS REQUIRED FOR PROPOSED WORK

1. **Software required**
    1. Arduino IDE
2. **Hardware required**
    1. Flame Sensor
    2. Ultra-sonic sensor
    3. Servo Motor
    4. NodeMCU ESP8266
    5. L293 Motor Driver
    6. Bo –Motor

BIBLIOGRAPHY / REFERENCES

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