



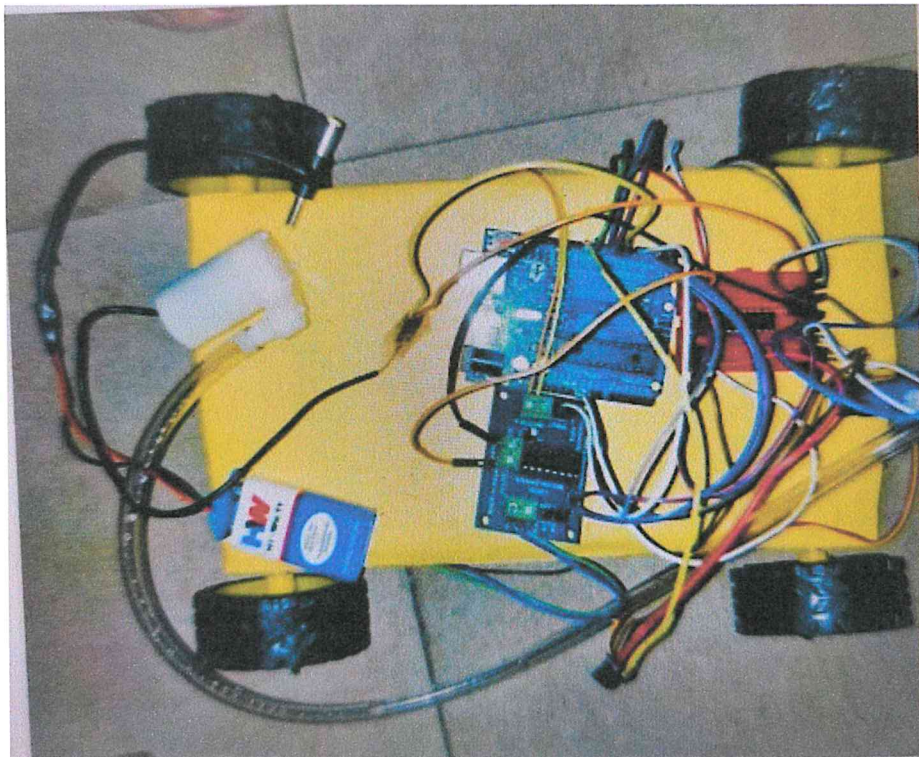
Amrita Sai Institute of Science and Technology (Autonomous)

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Recognized by UGC under 2(f) and 12(B) of 1956 Act
Amrita Sai Nagar, Paritala, Krishna District, Andhra Pradesh-521180
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SENSOR BASED FIRE FIGHTING ROBOT

Detecting fire and extinguishing is a hazardous job for a fire extinguisher, it often risks the life of that person. This project aims in giving a technical solution to the mentioned problem. A robot is a mechanical design that is capable of carrying out a complex series of actions automatically, especially one programmable by a computer. A fire extinguisher robot is a DTMF tone controlled robot that has a small fire extinguisher unit added on to it. This mobile robot is controlled using a mobile phone through DTMF tones for its movement and reaching the fire, the flame sensor detects the fire and gives the further signal to the extinguisher units to trigger the pump and spray the water. The whole system is programmed using an Arduino UNO board (ATmega328P microcontroller) which forms the brain of the system.



Fire Fighting Robot



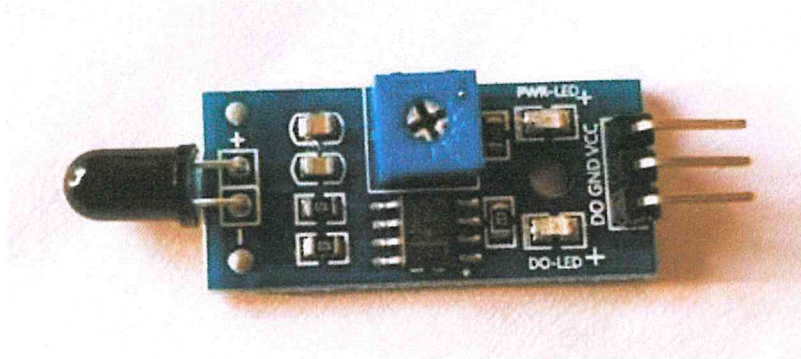
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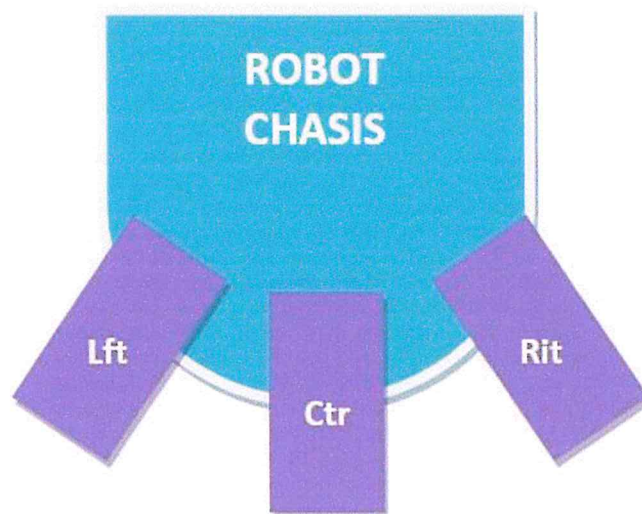
Working Concept of Fire Fighting Robot:

The main brain of this project is the Arduino, but in-order to sense fire we use the **Fire sensor module** (flame sensor) that is shown below.



Fire Sensor Module

So, we place three such sensors in three directions of the robot to sense on which direction the fire is burning.



Ultrasonic Sensor:

The Transducer's sonic waves would be absorbed by an object and returned to the transducer. The time it takes for the ultrasonic sensor to transition from emitting to receiving sound waves is proportional to the distance between the object and the sensor as shown in the above Figure.



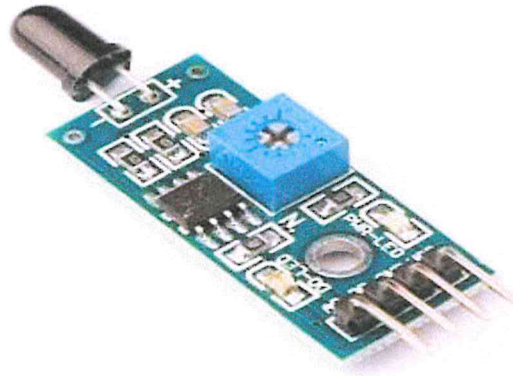
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Ultrasonic Sensor

Hard surfaces are the strongest reflectors of sonic waves, and may be solids, granules, liquids, or powder. The distance can be calculated precisely and without touch using an ultrasonic sensor. It could be anywhere from 2cm to 3m long.



Flame Sensor

RESULT

Fire Fighting Robot has developed to reduce human life lost and to develop such a device that automatically sense fire and extinguish it without human intervention. In this the fireplace is detected using the IR Flame sensors and are connected to Arduino UNO, which control the movement of Motor drive that helps the robot to reach the fireplace and extinguishes it with the pumping mechanisms. In the industry if any fire accident occurs, there is a need of person to monitor continuously and rectify it. In this process if any time delay takes place irreparable loss occurs in industry. The firefighting robot continuously

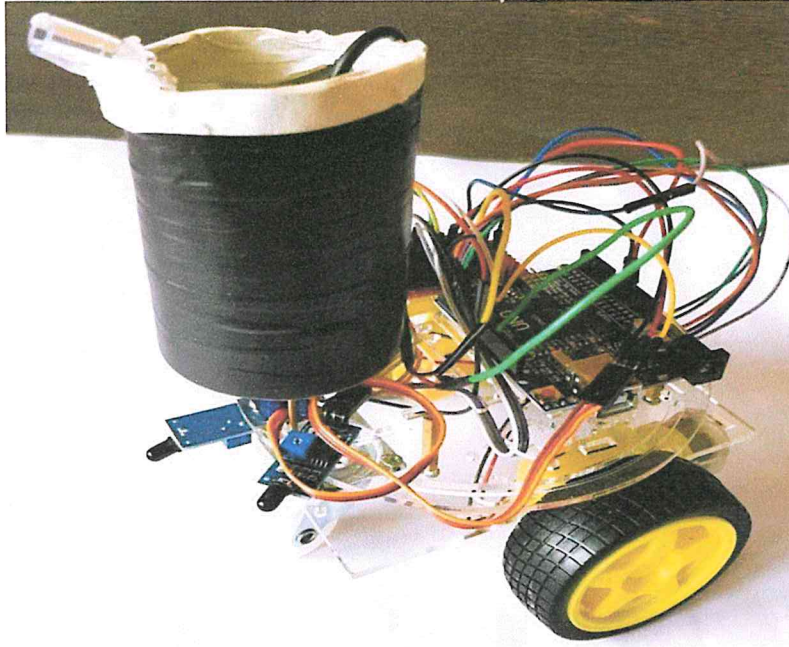


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monitors the surrounding and helps in extinguishing the fire. The below figure shows the overall prototype of Fire Fighting Robot.



Prototype of Fire Fighting Robot

This student's project, we are using in our campus in administration block, examination center to identify the fire in the block.

IQAC

IQAC Coordinator

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Amrita Sai Nagar, Paritala -521180

Principal

PRINCIPAL

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