# Fire Fighting Robort Using Arduino

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***Abstract*** **- Fire incident is a disaster that can potentially cause the loss of life, property damage and permanent disability to theaffected victim. Major fire accidents do occur in industries likenuclear power plants, petroleum refineries, gas tanks, chemicalfactories and other large-scale fire industries resulting in quite serious consequences. Thousands of people have lost their lives in such mishaps.**

**Therefore, this project is enhanced to control fire through a robotic vehicle. With the advancement in the field ofRobotics, human intervention is becoming less every day and robots are used widely for purpose of safety. In our day-to-day life fire accidents are very common and sometimes it becomes very difficult for fireman to save human life. In such case firefighting robot comes in picture.**

***Index Terms*****-Arduino Nano.**

## I. INTRODUCTION

Fires represent a constant threat to ecological systems, infrastructure and human lives. Past has witnessed multiple instances of fires. With the faster and faster urbanization process, more and more high-rise buildings appear around us. This also can make the frequency of fire increase and bring great losses to people's lives and property. In areas where fire would pose an unreasonable threat to property, human life or important biological communities, efforts should be madeto reduce dangers of fire fire. As the damage caused by fires is so tremendous that the early fire detection isbecoming more and more important.

Recently fire incidents is a disaster that can potentially cause the loss of life, property damage and permanent disability to the affected victim. Therefore, this project is enhanced to control fire through a robotic vehicle. Withthe advancement in the field of Robotics, human intervention is becoming less every day and robots are used widely for purpose of safety. In our day-to-day life fire accidents are very common and sometimes it becomes very difficult for fireman to save human life. Insuch case firefighting robot comes in picture.

## II. LITERATURE SURVEY

The common conventional firefighting methods involve fire brigades, portable fire extinguisher (hand held) and sprinklers. These conventional methods consume lot of time to reach the place of the mishap likethe fire brigade must be deployed from the fire station andshould get through the traffic and reach the fire struck area, the portable extinguisher is also no gift because it isgenerally place at one off the corners of the building which may be difficult to reach and it needs constant maintenance. On the other hand the sprinkler and smoke detector set up is very non reliable method because the sprinkler pipes has any defect may not provide enough pressure and it is suited to cover large areas.

## III METHODOLOGY

In this proposed system when fire is detected robot alerts public and by sprinkling water stops the fire extension and prevents lost of data, lives...etc. and that is done in the process by using the flame sensor fire is detected as in the ranges of flame sensor and then for alerting the public buzzer is used and in the same way by usingGSM module msg is sent to special number after that By the Arduino bluetooth control app robot is manually moved towards the fire and then water is sprinkling can be done in order to stop the fire .

## IV.WORKFLOW OF THE PROPOSEDSYSTEM

The work flow of the firefighting robot is explained in the section. the flow chart of the proposed system is illustrated in Fig 4.1.

Step1:start.

Step2:switch on 12v power supply.

Step3:Intialize the flame sensor, servo motor, buzzer,

GSM module and motors.

Step4:If flame is detected through flame sensor then buzzer will alert the public and by using GSM module SMS is sent to a specific number.

Step5: Then by using Arduin Bluetooth control app robot wheels are controlled and directed to the fire accident place.

Step6:Then by using servo motor & submersiblemotor pump water is sprinkled on flame in orderto stop and control fire extension.

Step7:then stop

## V.RESULT

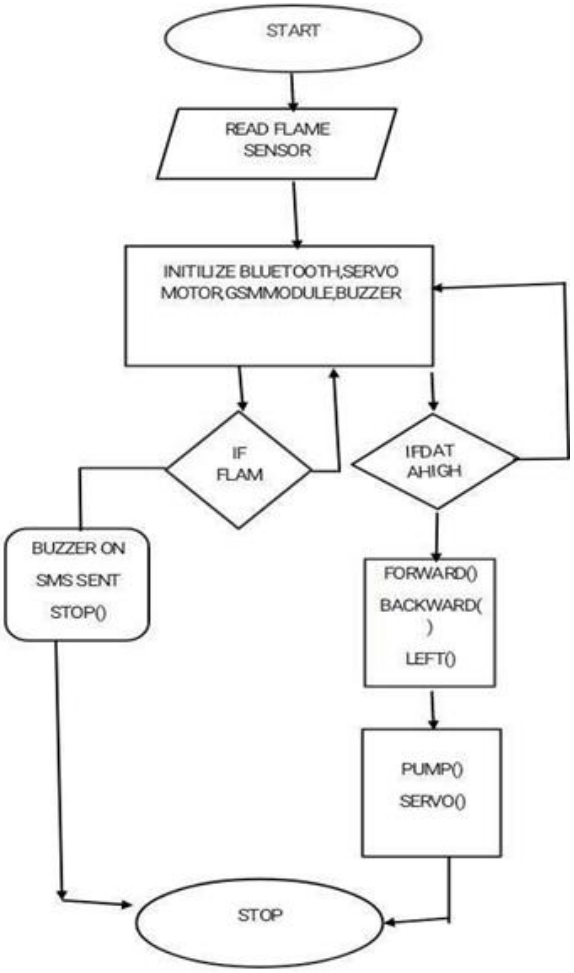


Figure 1:Flow chart

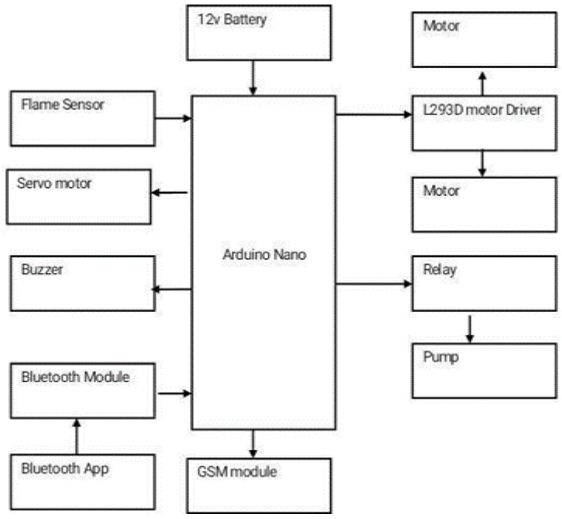


Figure 2:Block diagram

## VII.FUTURE SCOPE

The Robot when detects fire, it moves on its own. Arduino will control the motor through the motor driver circuit. To rotate right or left direction, and In other directions. If Arduino flame sensor will detect thefire then the robot will move forward to the fire slowly.As soon as it detects fire, robot needs to stop at acertainlimit and should not run over the fire. The LM35 sensorused here senses the heat. If it sensor output is greater than threshold value, it stops and moves back slightly toaccommodate extinguishing. Then centrifugal pump throws water at fire to put it out. Fire extinguisher is also provided to put out fire.

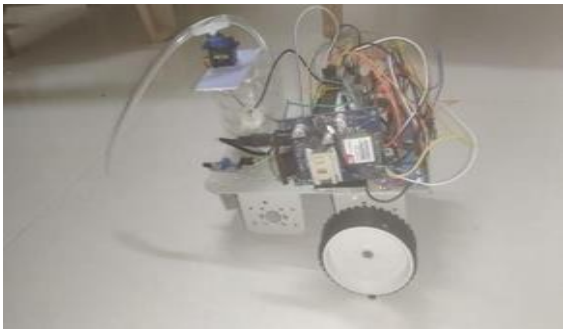

Figure 3: Output

## VI.CONCLUSION

In the fire-extinguishing robot project, the aim was to develop a system that detects and extinguishes the firebefore the fire starts and informs the electronic environment. In this project, targets are microcontroller and motor control with reductive

motor, flame detectionwith flame sensor, Bluetooth communication. The mobile robot which is designed as a result of this study communicates with the mobile phone through theserial port via the serial port in the microcontroller control so as to determine the fire.

This project has only scratched the surface. As in the design simplifications and the implementation constraints in suggest, our project is very much a proof- of-concept. In particular, a practical autonomous fire- fighting system must include a collection of robots, communicating and cooperating in the mission; furthermore, such a system requires facilities for going through obstacles in the presence of fire, and ability to receive instructions on-the-fly during an operation. All such concerns were outside the scope of this project. However, there has been research on many of these pieces in different contexts eg coordination among mobiles agents, techniques for detecting and avoiding obstacles,on-the-fly communication between humans and mobiles agents, etc. It will be both interesting and challenging to put all this together into a practical, autonomous fire-fighting service

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