# AUTOMATED FLAME EXTINGUISHER

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## 01. Introduction

Fire fighting robots are machines that are designed to fight fires in dangerous or inaccessible environments. They are equipped with sensors that can detect fire, smoke, and heat, and they can use a variety of extinguishing agents to put out fires. Fire fighting robots can help to save lives and property by allowing firefighters to fight fires from a safe distance

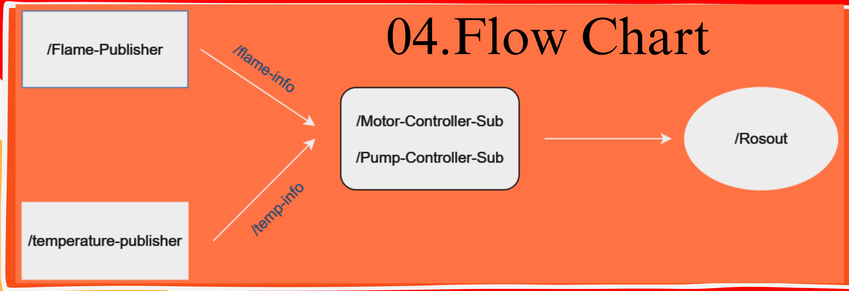
## 02. Objective

To design, build, and test a fire fighting robot that can safely and effectively extinguish fires where a human cannot possibly enter

## 03.Robotic operating system (ROS)

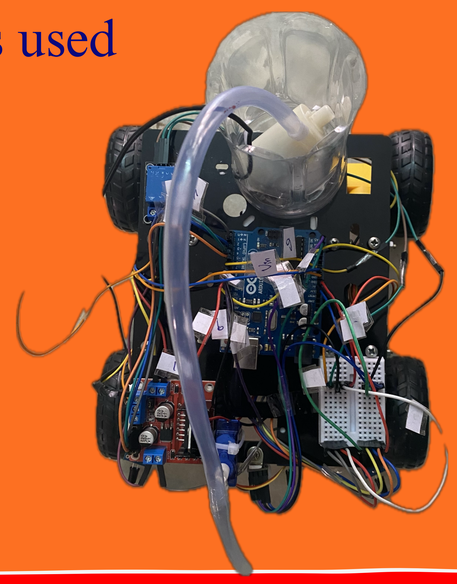
Robot Operating System (ROS or ros) is an open-source robotics middleware suite. Although ROS is not an operating system (OS) but a set of software frameworks for robot software development, it provides services designed for a heterogeneous computer cluster such as hardware abstraction, low-level device control, implementation of commonly used functionality, message-passing between processes, and package management Running sets of ROS based processes are represented in a graph architecture where processing takes place in nodes that may receive, post, and multiplex sensor data, control, state, planning, actuator, and other messages. ROS Noetic Ninjemys is the thirteenth ROS distribution release. It was released on May 23rd, 2020.ROS Noetic Ninjemys is primarily targeted at the Ubuntu 20.04 (Focal) release, though other systems are supported to varying degrees

## 04.Flow Chart




## 05.Components used

- BO Motor x4
- Base plate
- Flame Sensor x3
- Wheels x4
- Rasberry Pie
- L298 driver
- 5V relay module
- Mini breadboard
- MLX 90614
- Battery holder
- Servo sg90
- Container to hold water
- Water pump
- Water hose with Motor attachment



## 06.Algorithm

- Workspace with four packages
  flame -detects the flame from threee directions right left forward
  temp - detects the temperature
  move -controls the movement of the bot
  pump - subsribers to the temp publisher and pumps water
- setup file is integrated with Rasberrypi
- all files launched together in order

## 07. Results/Findings

The results and findings of the Raspberry Pi-based Flame Extinguishing Robot project validate the feasibility of using Raspberry Pi and intelligent algorithms to develop an autonomous fire-fighting solution

## 08. Conclusion

The Raspberry Pi-based Flame Extinguishing Robot project has successfully achieved its objectives and demonstrated the potential to revolutionize fire safety measures. By integrating the power of Raspberry Pi with intelligent algorithms, this autonomous robot offers an effective and cost-efficient solution for detecting and suppressing flames in various environments.


## Affiliations

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