

# A Review on Iot Based Fire Fighting and Affected Area Monitoring Robot

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## ABSTRACT

AN IoT primarily based fire-fighting and affected area observance automaton is planned. This fire-fighting automaton are often used as a supplementary to the fire-fighters in vital things. To operate this automaton, a flame sensing element, a gas sensing element, an IR sensing element, and a temperature wetness sensing element has been used. The flame sensor is employed to notice the hearth at identical time because the gas sensing element informs regarding the presence of burnable gases, the Passive Infrared sensing element confirms the presence of a personality's, and the temperature wetness sensing element sends statistics regarding the temperature and wetness of the neck of the woods. The automaton will run in each manual system and involuntary system. This paper discusses the detail and prime operating condition of a fire-fighting robot and recapitulates an IoT primarily based communication system to monitor the fireplace affected space victimization Wi-Fi and conjointly discusses the elaborate functions of every module and also the implementation of the system. All the info are sent to the cloud server for any investigation. The planned fire fighting automaton has been used for many experiments and correct analysis has been done primarily based on its performance. it's a wonderful performance to extinguish the fire in an emergency state of affairs.

**Keyword:** IOT, Firefighters, Recess, Flame, Gas, Temperature, Humidity, manual, utonomous.

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## INTRODUCTION

Fires may cause many disasters to natural property and people. In fire accident two important aspects are speed and safety. It is difficult for fire fighters to evacuate the situation without being subjected to harm. However fire fighting robot helps to overcome this problem. It has a property to fight against fire and provide rescue operation. This robot helps to monitor area after fire. IOT is incorporated with this robot. Different types of fire fighting robot are available. Each has different types of sensing, operating, extinguishing mechanism.

## LITERATURE REVIEW

**Humayun Rashid (2016)** presented design and development of a multiple sensors based fire extinguisher robot. The proposed and implementation is demonstrated with a brief discussion of construction and operation. The developed fire extinguisher robot can be operated in multiple modes using the DTMF and Bluetooth remote control as well as GSM and GPS technology. Basically, three different sensors of flame sensor, temperature sensor, and smoke sensor have been used to proper detection of fire. The robot can be controlled using both DTMF remote control and Android smartphone and can be operated in three different modes. The first mode allows full autonomous operation of the robot which can be activated by the user or by the robot itself based on the situation. The second mode is a line following mode where robot follows a black drawn line to detect fire and the third mode is complete manual operation using remote control.

**Kalathiripi Rambabu (2018)** presented a robot which acts as an extinguisher of fire. This proposed fire fighting robot is expected to produce a small but very powerful and versatile robot. It detects fire in the disaster prone area. We design this project with the help of XLR8 board. It controls and detects fire automatically. With the help of the IOT we can also control our robot manually. We can switch between these two modes i.e., automatically or manually in either way we want. We are using a camera to know what is happening and Raspberry pi to know the status of the robot. Here, the fire detection robot overcomes the problem of hitting the obstacle by sensing the obstacle and moves into the direction where it is obstacle free.

**Megha Kanwar (2018)** proposed an IOT based fire fighting robot that detects fire. After being informed the authorities can start visualizing the fire location and can communicate with people stuck with a help of an automatic receiver installed. Instructions can be given to the robot regarding its movement, turning on its water pump or carbon-dioxide pump depending on fire type through long distances. The fire type and carbon-monoxide level is known using the sensors installed that provide a graph to make the analysis. The analysis is also useful to further give information to safety authorities regarding amount of poisonous gases inhaled over a time period by the occupants of the affected area so they can take appropriate actions to undo the harm.

**Satya Ranjan Das (2019)** proposed a golem supported IOT having capability to observe and fight against fireplace in our homes, industries as well as offices wherever accessibility of human isn't attainable. The new and non-obviousness during this device is that the golem that is free to move within the region of fireplace either in our homes or our offices wherever human's practicability isn't attainable. This golem can fight against fireplace in addition as harmful gases victimisation Infrared detector and gas detector and once golem detects any fireplace or gas within the building of any homes or offices it'll fight with harmful gas using applicable detector and at the same time sent the message to user by

victimisation SMS services or GPRS Packs. golem is controlled by IOT server with the assistance of computers, laptop computer or mobile.

**Hong Zhang (2020)** projected AN organic and effective cooperation model primarily based on multi-agent systems is projected, that allows the relatively freelance agents to get together with one another to complete the complicated fire-fighting tasks, therefore on improve the ability of ending malignant fires. Finally, AN illustrative example is given to judge the performance so as to clarify the effectiveness of the projected answer system.

**M. Devi (2020)** planned a mechanism relies on IoT and has flame sensing element to find the fireplace. The movement of mechanism is controlled by gear and motor driver. The communication is finished with Arduino ATmega258 microcontroller and IoT device. The mechanism conjointly has the capability to find obstacles that comes across its path. It will send live updates to webpage by means of IoT device.

**Md. Ratul Ahmed Rahat (2020)** This paper focuses on building a sensible fire fighting robot with multiple applications. In today's world, the consequences of fire and explosion hazard is incredibly damaging in terms of lives lost, injuries and property harm. This automaton is constructed in such the simplest way to minimize the harm thanks to any hearth accident. The SAFF automaton has twin dominant mechanism. It will operate each manually and autonomously. In manual mode, the automaton is manually controlled by {a hearth a fireplace hearth} fighter to extinguish fire by victimisation water. On the other hand, within the autonomous mode, the automaton will automatically notice the hearth, walk towards the hearth and extinguish it by victimisation carbon di compound. it's associate obstacle avoiding automaton that detects hearth by victimisation gas and flame sensors. it's 2 varieties of hearth extinguishers put in within its body. It can even read what's occurring before of it through a camera. the complete setup consists of 3 Arduino boards, buck modules, sensors, a GSM module, relays, servo motors and dc gear motors that all area unit powered by 2 12V metal compound batteries.

**Vojtech Spurny (2021)** presents a completely unique approach to autonomous termination of indoor fires within a building by a Micro-scale unmanned Aerial Vehicle (MAV). specially, dominant and estimating the MAV state, detection of a building entrance, multi-modal MAV localization throughout the outdoor indoor transition, interior motion coming up with and exploration, hearth detection and position estimation, and fire extinguishing area unit mentioned. The performance of those components, in addition as of the complete integrated system, are evaluated in simulations and field tests in varied exigent real-world conditions.

## CONCLUSION

Fire fighting and affected area monitoring is based on internet of things. This robot reduce risk in any situation. Industries with high risk can use this type of robot.

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