

# SEMI CONTROLLED MOTORISED FIRE EXTINGUISHER GOLEM

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**Abstract-** Nowadays robots are more often used for human works and communication between human is less. Flame mishaps is increase day to day and it get dangerous for human life. So, keep the human life, environment and riches safe we propose the use of robots in place of humans in case of flame causality. This robot can work alone, and we can control this robot from a safe place. This robot can be used as a trouble gadget. It is designed in such a way that it can climb stairs and can extinguish fires before anyone could get hurt.

**Keywords-** Bluetooth Module, Microcontroller, Camera

## I. INTRODUCTION

As the computerized field is developed a lot, human coordinated effort is made less, and the robots are commonly used with the true objective of security. Fire disasters have ended up being fundamental in our regular daily existence and once in a while it may provoke dangerous issues which will be all the more constantly for the firemen for verifying the human life. In order to keep up a key separation from these cases, this robot is used to screen human lives, condition and wealth against fire incidents. For structuring understudies, who are enthused about mechanical self-governance, this firefighting robot adventure is an impelled assignment. The Bluetooth development for remote assignment and Arduino UNO R3 are melded in this endeavor. The prerequisite for a robot or a contraption that perceives and covers a fire exclusively is long past due. Fire accidents start when someone is either snoozing or not at home or as a result of some absence of respect in labs, stores, etc. By growing such a device, individuals, similarly as property, can be

saved at a higher rate with least damage realized by the fire [5].

As instrumentation structures, our endeavor was to design and collect a model system that could autonomously distinguish and soak a flame and besides goes for restricting the air tainting. The potential results of fire are at any remote domain or in an industry, for instance, in bits of garments go down, cotton production lines, and fuel storing tanks, electric spillages may result in horrendous fire and damage[1]. To the most cynical situation of accidents, fire causes significant

hardship both financially and by taking lives. These robots are the best way, in solicitations to ensure the life of individuals, condition and wealth.

It can investigate alone successfully and channel the proximity of fire and smother t. In cases, this robot can be used as an emergency device. It is organized in such a way, that could perceive the fire when the fire gets and extinguish before the fire spread out and cause overpowering harm.[2] The firefighting robot will have a future augmentation that it can work with fire fighters, which extraordinarily decline the danger of harm to disastrous losses. It is a creative work in the field of mechanical self-governance that progresses in the direction of a sensible and practical access to save the lives and keeps the danger to property [1].

## II. LITERATURE SURVEY

In the present time putting out fires is an unsafe issue. Numerous creators are chipping away at various strategies for putting out fires. This robot is planned and developed which can smother fire. The robot is completely user controlled [3]. It contains a flame sensor which alerts us with the help of the buzzer that fire is reaching the robot. This robot is capable in going Flame mishaps conditions and stop the fire. Flame sensors are used to recognize fire. When fire is identified, robot produces a sound with the help of buzzer an alert us. The robot is made in such a way that it can also climb stairs. This helps the robot to go on floors in order to extinguish the fire and save life's.

## III. PURPOSE OF FIRE EXTINGUISHER ROBOT

The reason for this undertaking is to configuration, manufacture, and test a robot fit for dousing building and storm cellar fires and viably supplanting a fireman in very hazardous circumstances. The robot will take into account firemen to put out a flame remotely, however enable rescuers to scout a consuming structure before sending any firemen inside. The execution of this robot will expand the security of firemen and subsequently help alleviate passings from perilous conditions. The robot will be constrained by an administrator by means of remote control[1]. The

administrator will have visual input from the robot through the utilization an installed camera with typical imaging and infrared imaging for low light circumstances. While the robot configuration will be as vigorous as could be expected under the circumstances, the fundamental objective of the venture is a proof of idea. The structure of the robot has been isolated into a few noteworthy segments: the versatility base, the quenching framework, the edge, the base station, and inner control. Size and weight requirements were resolved using the New Jersey Building Codes and the heaviness of a completely prepared fireman. Torque, gear proportion, and current burden computations were performed to decide parts. Various structure choices were researched for every part of the robot. The last structures were picked dependent on viability, reasonableness, and accessible assets. Eventually, the robot ought to have full versatility on level and slanted surfaces and can cross a staircase. The robot ought to almost certainly completely quench a test fire in a safe a controlled way, while sending visual criticism to the administrator [5]. A completely working base station, going about as a remote hotspot for the criticism framework, ought to be created and the administrator ought to most likely completely control the robot by means of a remote interface. These objectives ought to be met while following the size and weight limitations.

#### IV. METHODOLOGY

This project is designed in such a way to create a fire fighting robot that can fight, or we can say extinguishes the fire and does not let it damage any human life, environment and riches. The robot is made in a similar as a rover does and it has four motors which are connected to a microcontroller and that is controlled with the help of any android device as we have connected a Bluetooth module with the microcontroller. A pump motor is also attached with the robot and that is placed in a container over the robot to pump the water and sprinkle it on the flames in order to stop the flames [3].

At the receiving end we are using a Bluetooth module to receive the signal according to that the robot will work. The Bluetooth module we have used here is HC-05 and we have burned the code in the microcontroller and all the devices that are placed on the robots are connected to the same microcontroller. In order to make the project run and the microcontroller can manage so many modules we have connected a 4-Channel relay with it so it can transmit the power to each component accordingly. The code which is burned in the microcontroller is in assemble language and it is done on a software called "ARDUINO IDE". The tyres have a belt on them so that it could climb stairs or small obstacles easily.

The robot body is a simple body of stainless steel which we have covered with a fibre cloth (which is not effective from fire ) so that when the robot goes in fire it would not get burnt itself and can work properly. Also, we have attached a camera through which we can see and control our robot easily and because of this condition only we have

attached a flame sensor. That if we are not focused on our robot means at the time, we are extinguishing fire, at that time the fire reaches our robot we will get alarmed [1].

The robot here works in order to save lives that is the most precious and valuable thing to us. And for that we have made this robot so that human life will not attain any damage while extinguishing fire and this robot is controlled from a distance. So, we can stop the fire from spreading furthermore.

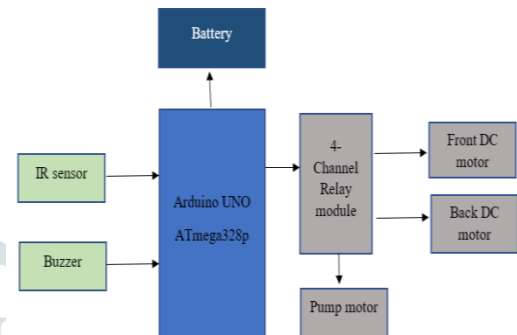


Fig. 1 Block diagram of fire extinguisher robot

#### Arduino

The robot works beneath the control of the microcontroller (ARDUINO UNO atmega328p). It is a simple microcontroller with an IC atmega328p which have 32 pins, it can easily be operated and connected with almost every module.



Fig. 2 Arduino Uno module

The only hard part about it that you should know is the coding of the module that you are connecting with the microcontroller.

#### Robot Body

The robot body consist of wheels which are connected through a belt in case of climbing obstacles and stairs. It is fully covered from the top where are assembled all the components and placed the water tank to carry.

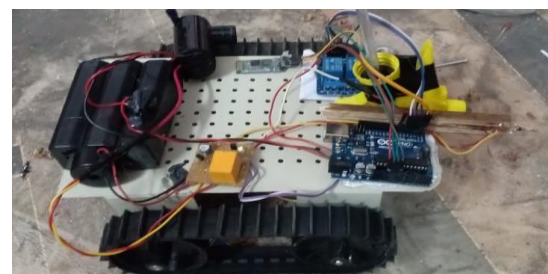


Fig. 3 Basic look of the robot without the fibre cloth

The wheels will work according to the signal given to them by the microcontroller. The components placed on the robot body is properly attached and the body is then covered with the fibre to protect the components from fire [6].

## V. Bluetooth Module

The HC-05 Bluetooth module is a great choice for wireless transmission. As this module can do both things transmitting as well as receiving the signal. The cost of this module is also not much high as compared to other wireless communication modules. This module can also relate to almost any other module and can transmit signal. And its work of receiving and transmitting can also be customized according to our need, we just must code the microcontroller accordingly [4].



Fig. 4 Bluetooth module HC-05

The Bluetooth module is of 6 pins and their names are as follows: - VCC, GND, TX, RX, KEY and LED. The Bluetooth module is already programmed in slave mode, so that there is no need for us to connect the key pin until unless we need to change the master control of the Bluetooth module [7].

The major difference between the two modes of the Bluetooth module is that in slave modes the Bluetooth module can only receive signal and obey the command that it has been given and in the master mode it can do both the things, it can receive as well as can transmit the signal. The Bluetooth module has a default transmission rate of 9600kbps, and the range of this module is 12 to 15 meter for proper use.

### IR sensor

This sensor is an electronic device that senses the heat signal from anyone's body as well as detects the motion of the surroundings. This type of sensor only senses the infrared radiations [2].

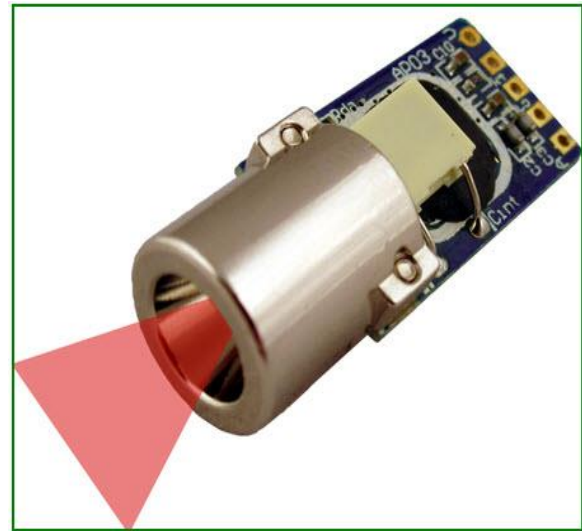


Fig. 5 IR sensor

It can detect the flame and this module can also be easily available in the market at a cheap price rather than other fire detecting sensors. Generally, all the objects emit some kind of thermal radiation. These kinds of radiations are invisible to our naked eyes. The only infrared radiation that we can see are of fire created by the flames.

## VI. FUTURE SCOPE

This robot is made in such a way that it can perceive flames and can move without any hesitation of getting burnt, it can also go over through the obstacles and climb stairs [5].

The advancement of the sensor framework and the advancement of the mechanical parts that can be assembled further in the robot to make it more advance and impenetrable. Its sprinkler can also be updated by using high pressure motor and the way it can be sprinkled over the flames. The range of the robot can also be extended by using a good range of transmission and receiving modules. And we can also add CO2 cylinder instead of the water tank [4].

The robot can also be made to work on its own without any controller by using sensors through which it can detects the fire and move to the source of fire and stop it from spreading and can save life's without putting any human life in danger.

The robot can be placed in every house, building, industry etc In case if their catches fire so that the fire can be stopped their only without getting any harm to human life, environment and riches [3].

## CONCLUSION

This independent robot effectively plays out the assignment of a flame warrior in a mimicked house fire. Profited by this innovation, since the cost of enacting different sorts of flame quenchers may exceed that of a robot, where item stock could be harmed by uncertain flame control strategies. Aim was to establish a user friendly equipment so that there could be minimum lose to the life and property which is caused by the fire disasters.

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