

MINI PROJECT
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FOREST FIRE DETECTION AND
EXTINGUISHER

SYNOPSIS



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About the Project:-

The fire in the forest is by natural fire or man-made fire and it results into land clearing and deforestation. Natural forest fire includes an unplanned burning of Trees, bushes, and wood due to lightning, while human-induced forest fire results from the unauthorized burning practice of forests for attaining farmland.

Fire Detectors play a very important role in this field because it help in detecting fire or smoke at an early stage and can help in saving Trees. Commercial Fire detecting systems usually have an alarm signaling, with the help of a buzzer or Siren. We have designed an IOT based Fire detection and Extinguisher System using Temperature and a smoke sensor, GPS system, Motor pumps which would not only signal the presence of fire in a particular premise but will also help as a extinguisher as we use pumps so that the automatically pumps get on and water the fire so that fire cannot spread in the forest and through GPS we can find exact location so that we can call authorities for further Safety. These system do not require any Human interaction.

Objective of the Project:-

Detection of fire in forest is necessary to avoid destruction of trees due to fire accidents both natural and induced. Detection of fire can prove to be very important as it could mean the difference between life and death. Fires can occur from anywhere and at any point of time, hence the presence of Fire Alarm System helps in keeping Trees and Wildlife safe. One of the most destructive properties of fire is that it spreads exponentially and with the right medium can spread uncontrollably. To overcome from this problem we have used motors in this system so that whenever sensor sense fire our automatic system can sprinkle water on the fire using motor so that it does not spread vigorously.

Audience Target:-

We have made this system basically for the Wild Forest because it is very difficult to reach their and also difficult to extinguish the fire . But we can use this system in many other places like big malls, a large playground, temples and in many ways as we know sometimes fire is a natural process and it is also unplanned. This is why timely detection of fire is necessary for avoiding a fire hazard.

Technology Used:-

IOT Based Fire Detection and Extinguisher System uses four Sensors, namely, Temperature, Flame, Gas and GPS sensor. Here we used temperature sensor so that it can detect temperature higher than normal or unbearable. Gas Sensor is used so that it can detect amount of methane gas because generally methane is the source of fire in forest. We have also used here Motor Pump and Motor Drivers to extinguish the fire by sprinkling water over it. There is an ADC convertor, which converts the analog signals received at the sensor end to digital and then transmits them to the micro-controller, Arduino. The micro-controller is programmed to turn on the buzzer, when the temperature & the smoke reach a threshold value so that it can start sprinkling water over fire to control it.

Requirements:-

a) Hardware:-

- Computer/Laptop
- Processor: i3 or more
- 8GB RAM
- NODE MCU
- SENSORS (Fire,Gas,GPS,Temperature)
- Motor pump
- Motor driver
- Jumper wires

b) Software:-

- Python
- Arduino
- GitHub

Future Prospects:-

Early cautioning and quick reaction to a fire breakout are the main approaches to dodge incredible misfortunes and natural and social legacy harms.

Australia is being ravaged by the worst wildfires seen in decades, with large swaths of the country devastated since the fire season began in late July. Similarly, with the Amazon forests which is actually a big source of our planet oxygen that's 20 percentage.

Through this project we can save the forests with these worst fires and we can save the lives of wildlife. It's low cost and efficient way for the fire detection and fire extinguish

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