

# Master of Computer Application (MCA)

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Submitted By

Chaitanya jeena

Roll-No :- 2201124



## Department of Computer Application

GRAPHIC ERA HILL UNIVERSITY(GEHU),

DEHRADUN

SYNOPSIS FOR Forest Fire Prediction Using Machine Learning

## Problem Definition:-

Forest fires cause lots of damage, some of them are :- loss of wildlife habitat, extinction of plants and animals, destroys the nutrient rich top soil, reduction in forest cover, loss of valuable timber resources, ozone layer depletion, loss of livelihood for tribal people and poor people, increase in global warming.

Prerequisites :

- Basic HTML
- Basic CSS
- Basic JavaScript
- Basic J Query

## ## Front-end Part

1. \* HTML
2. \* CSS(Materialize)
3. \* JavaScript(Materialize)
4. \*JQuery

## ## Back-end

1. \* Python(Machine Learning & flask)

What will we learn? By building this app, we'll learn some stuff like,

- The developing web application using python.
- The use of machine learning.

## Objective:-

Forest fires are a significant environmental and societal issue, causing expansive damage to natural coffers, wildlife, and mortal lives. Beforehand discovery and prediction of Forest fires are pivotal in mollifying their impact and reducing their spread. timber fire prediction involves assaying colorful factors similar as rainfall patterns, foliage humidity content, and literal fire data to read the liability of a fire outbreak in a particular area.

Forest fire prediction model uses Random Forest regression algorithm. Random forest regression algorithm is bagging technique. Random forest regressor algorithm is the supervised learning algorithm it uses labelled dataset to train algorithm. Random forest makes use of Decision Tree Algorithm.

## INTRODUCTION :-

**Forest fire prediction** refers to the process of using colorful ways and tools to read the liability and implicit inflexibility of a fire outbreak in a forested area. Forest fires are caused by a combination of factors similar as dry rainfall conditions, **high temperatures, Humidity**, and mortal conditioning similar as conflagrations, cigarettes, and fireworks.

There are several styles used in forest fire prediction, including statistical analysis, machine literacy algorithms, and remote seeing ways. These styles help to gather and dissect data on rainfall conditions, energy humidity content, Oxygen, and other factors that contribute to the liability of a fire outbreak. Forest fire prediction models can be used to give early warning systems to warn authorities and residers of implicit fire peril.

These models also help to identify areas that are at high threat of backfires and enable authorities to take necessary preventives, similar as enforcing fire bans and evacuation orders, to help or minimize the impact of forest fires. Overall, forest fire prediction plays a critical part in precluding and mollifying the damage caused by backfires.

By furnishing accurate and timely information, it allows authorities to take visionary measures to reduce the threat of fire outbreaks and cover both mortal and natural coffers. In future predicting forest fire is expected to reduce the impact of fire. In this paper we are implementing the forest fire prediction system which predicts the probability of catching fire using meteorological parameters like **temperature, Oxygen, Humidity**. we used Random Forest regression algorithm to implement this module.

ABSTRACT :-

Wildfire forecasting is an important part of wildfire management. Resource allocation plays an important role in mitigation and recovery. In this article, wildfire forecasts are explained and analyzed based on intelligence. A forest fire risk prediction algorithm based on support vector machine is proposed. The algorithm relies on past weather to predict the day's danger level. Using data from kaggle and algorithm used in this project is Logistic Regression and it is a supervised machine learning algorithm that accomplishes binary classification task by predicting the probability of an outcome.

## Methodology/ Planning of work:

Methodology will include the steps to be followed to achieve the objective of the Project during the project development.

### Step 1: Basic structure of Forest Fire Prediction App

The basic structure of this Forest Fire Prediction App has been created using the following HTML and CSS code. This structure will contain all the information. The width of this area: 100%

and margin: 50px auto has been used to keep it in the middle.

### Step 2: Create a place to input the attribute for fire prediction

Now I have created the 3 text box that contains space and buttons for input. First I took the help of 4 input functions. The first input will help to input the name of the Temperature. . The second input will help to input the name of the Oxygen . The third input will help to input the name of the Humidity. The forth input will help to create the submit button.

### Step 3: Create a display to view the fire predictions

Now I have created the second box. In which all the information can be found. It will basically act as a display. Whenever you input the all attribute of text box, all the information can be found in this box.

First, in this box, I arranged to show a heading. Where you can see the fire prediction.

### Step 4: Activate Simple for prediction using Python

Above I have used the necessary HTML and CSS code to create this **web application using ML**. Now you need to connect web application with python(flask).

In python there is machine learning logic in it .we take data from user and uses Logistic Regression algorithm . Random forest regression algorithm is bagging technique. Random forest regressor algorithm is the supervised learning algorithm it uses labelled dataset to train algorithm. Random forest makes use of Decision

Tree Algorithm.

**Tools/Platform used:** Software Requirement: OS: Windows

IDE: Visual Studio Code

1. Language: HTML
2. \* CSS
3. \* JavaScript
4. \* JQuery
5. \* Python

Hardware Components:

- - Processor – Dual Core
  - Hard Disk- 1 TB
  - Memory- 6GB RAM
  - Keyboard-Any Standard

## References:-

Website Link - <https://www.w3schools.com/html/>

<http://www.javatpoint.com/css-tutorial>

<https://www.w3schools.com/python/>

<https://www.kaggle.com/>