



Meerut Institute Of Engineering And
Technology

PROJECT REPORT

On

WEATHER PREDICTION SYSTEM

Submitted in partial fulfillment of the requirement

For the award of the degree of

B.TECH

In

Computer Science And Information Technology

Submitted By

HARSHIT YADAV

VIKASH KUMAR

2000680110020

2000680110036

Under the guidance of

Ms. Aarti Verma

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ABSTRACT

Weather forecasting is the application of science and technology to predict the state of the atmosphere for a given location. Ancient weather forecasting methods usually relied on observed patterns of events, also termed pattern recognition. For example, it might be observed that if the sunset was particularly red, the following day often brought fair weather. However, not all of these predictions prove reliable.

Here this system will predict weather based on parameters such as temperature, humidity and wind. User will enter current temperature; humidity and wind, System will take this parameter and will predict weather(rainfall in inches) from previous data in database. The role of the admin is to add previous weather data in database, so that system will calculate weather(estimated rainfall in inches) based on these data. Weather forecasting system takes parameters such as temperature, humidity, and wind and will forecast weather based on previous record therefore this prediction will prove reliable. This system can be used in Air Traffic, Marine, Agriculture, Forestry, Military, and Navy etc.

1. INTRODUCTION

Rainfall Prediction is the application of science and technology to predict the amount of rainfall over a region. It is important to exactly determine the rainfall for effective use of water resources, crop productivity and pre-planning of water structures.

In this project, we used Linear Regression to predict the amount of rainfall. Linear Regression tells us how many inches of rainfall we can expect.

2. PROBLEM STATEMENT

It is important to exactly determine the rainfall for effective use of water resources, crop productivity and pre-planning of water structures.

The traditional forecast process employed by most NMHSs involves forecasters producing text-based, sensible, weather-element forecast products (e.g. maximum/minimum temperature, cloud cover) using numerical weather prediction (NWP) output as guidance. The process is typically schedule-driven, product-oriented and labour-intensive.

Over the last decade, technological advances and scientific breakthroughs have allowed NMHSs' hydrometeorological forecasts and warnings to become much more specific and accurate.

As computer technology and high-speed dissemination systems evolved (e.g. Internet), National Weather Service (NWS) customers/partners were demanding detailed forecasts in gridded, digital and graphic formats.

Traditional NWS text forecast products limit the amount of additional information that can be conveyed to the user community. The concept of digital database forecasting provides the capability to meet customer/partner demands for more accurate, detailed hydrometeorological forecasts.

3. PURPOSE

There are several reasons why weather forecasts are important. They would certainly be missed if they were not there. It is a product of science that impacts the lives of many people. The following is a list of various reasons why weather forecasts are important:

- 1.** Helps people prepare for how to dress (i.e. warm weather, cold weather, windy weather, rainy weather).
- 2.** Helps businesses and people plan for power production and how much power to use (i.e. power companies, where to set thermostat).
- 3.** Helps people prepare if they need to take extra gear to prepare for the weather (i.e. umbrella, rain coat, sun screen) .

4. Helps people plan outdoor activities (i.e. to see if rain/storms/cold weather will impact outdoor event).
5. Helps curious people to know what sort of weather can be expected (i.e. a snow on the way, severe storms).
6. Helps businesses plan for transportation hazards that can result from the weather (i.e. fog, snow, ice, storms, clouds as it relates to driving and flying for example)
7. Helps people with health related issues to plan the day (i.e. allergies, asthma, heat stress)
8. Helps businesses and people plan for severe weather and other weather hazards (lightning, hail, tornadoes, hurricanes, ice storms)
9. Helps farmers and gardeners plan for crop irrigation and protection (irrigation scheduling, freeze protection)

4. REQUIREMENTS

Hardware/Software	Hardware / Software element	Specification /version
Hardware	Processor	i3
	RAM	2GB
	Hard Disk	250GB
Software	OS	Windows, Linux. HTML , CSS. JAVA SCRIPT.

5. MODULES DESCRIPTIONS

1. In this module we first gather the data(dataset) for our prediction model. Data comes in all forms, most of it being very messy and unstructured. They rarely come ready to use. Datasets, large and small, come with a variety of issues- invalid fields, missing and additional values, and values that are in forms different from the one we require. In order to bring it to workable or structured form, we need to “clean” our data, and make it ready to use. Some common cleaning includes parsing, converting to one-hot, removing unnecessary data, etc.

2. In our case, our data has some days where some factors weren't recorded. And the rainfall in cm was marked as T if there was trace precipitation. Our algorithm requires numbers, so we can't work with alphabets popping up in our data. so we need to clean the data before applying it on our model.

3. Once the data is cleaned, In this module that cleaned data can be used as an input to our Linear regression model. Linear regression is a linear approach to form a relationship between a dependent variable and many independent explanatory variables. This is done by plotting a line that fits our scatter plot the best, ie, with the least errors. This gives value predictions, ie, how much, by substituting the independent values in the line equation.

4. We will use Scikit-learn's linear regression model to train our dataset. Once the model is trained, we can give our own inputs for the various columns such as temperature, dew point, pressure, etc. to predict the weather based on these attributes.

6.SOURCE CODE

```
<!DOCTYPE html>

<html lang="en">

<head>

  <meta charset="UTF-8">

  <meta http-equiv="X-UA-Compatible" content="IE=edge">

  <meta name="viewport" content="width=device-width, initial-scale=1.0">

  <title>WEATHER APP</title>

  <link rel="stylesheet" href="weather.css">

</head>

<body>

  <div class="header">

    <h1>WEATHER APP</h1>

    <div>

      <input type="text" name="" id="input" placeholder="Enter city name">

      <button id="search" onclick="searchByCity()">Search</button></input>

    </div>

  </div>

  <main>

    <div class="weather">

      <h2 id="city">Delhi,IN</h2>

      <div class="temp-box">

        

        <p id="temperature">26 °C</p>

      </div>

      <span id="clouds">Broken Clouds</span>

    </div>

    <div class="divider1"></div>
```

```
<div class="forecstH">
  <p class="cast-header">Upcoming forecast</p>
  <div class="templist">
```

```

    <div class="next">
      <div>
        <p class="time">8:30 PM</p>
        <p>29 °C / 29 °C</p>
      </div>
      <p class="desc">Light Rain</p>
    </div>
```

```

    <div class="next">
      <div>
        <p class="time">8:30 PM</p>
        <p>29 °C / 29 °C</p>
      </div>
      <p class="desc">Light Rain</p>
    </div>
```

```

    <div class="next">
      <div>
        <p class="time">8:30 PM</p>
        <p>29 °C / 29 °C</p>
      </div>
      <p class="desc">Light Rain</p>
    </div>
```

```

    <div class="next">
      <div>
```

<p class="time">8:30 PM</p>
 <p>29 °C / 29 °C</p>
 </div>
 <p class="desc">Light Rain</p>
</div>

<div class="next">
 <div>
 <p class="time">8:30 PM</p>
 <p>29 °C / 29 °C</p>
 </div>
 <p class="desc">Light Rain</p>
</div>

 </div>
</div>
</main>

<div class="forecstD">
 <div class="divider2"></div>
 <p class="cast-header"> Next 4 days forecast</p>
 <div class="weekF">

 <div class="dayF">
 <p class="date">Sun Jul 03 2022</p>
 <p>31 °C / 31 °C</p>
 <p class="desc">Overcast Clouds</p>
 </div>

 <div class="dayF">

```
<p class="date">Sun Jul 03 2022</p>
  <p>31 °C / 31 °C</p>
  <p class="desc">Overcast Clouds</p>
</div>
```

```
<div class="dayF">
  <p class="date">Sun Jul 03 2022</p>
  <p>31 °C / 31 °C</p>
  <p class="desc">Overcast Clouds</p>
</div>
```

```
<div class="dayF">
  <p class="date">Sun Jul 03 2022</p>
  <p>31 °C / 31 °C</p>
  <p class="desc">Overcast Clouds</p>
</div>
```

```
</div>
```

```
</div>
```

```
<script src="/weather.js"></script>
```

```
</body>
```

```
</html>
```

6. CONCLUSION

We successfully predicted the rainfall using the linear regression but here this is not very accurate only some times any way it depends upon the climate changes to season to season. Here we are taking only summer season weather data set it only useful to predict rainfall in summer season.

7. REFERENCES

The references of the weather forecasting is youtube , w3 school , javatpoint , geeks for geeks , tutorial point , git hub and others .