

# **LITERATURE SURVEY**

## **EXPLORATORY ANALYSIS OF RAINFALL**

### **DATA IN INDIA FOR AGRICULTURE**

#### **ABSTRACT**

India is an agriculture country, the economic growth of each year depends on the amount of duration of monsoon rain, bad monsoon can lead to destruction of some crops, which may result in scarcity of some agricultural products which in turn can cause food inflation, insecurity and public unrest. Rainfall has been a major concern these days. Weather conditions have been changing for time being. Rainfall forecasting is important otherwise, it may lead to many disasters. Irregular heavy rainfall may lead to the destruction of crops, heavy floods that can cause harm to human life.

In our analysis we are trying to understand the behaviour of rainfall in India over the years, by months and different subdivisions.

#### **INTRODUCTION**

Data science applications for farming includes convolutional neural networks to detect crop disease and deploy internet of things (IOT)-connected sensors to monitor health. Farmers can achieve even greater predictive power by combining site-specific data and third-party sources on weather and other factors.

#### **PROBLEM STATEMENT**

Basically, during the summers, the Indian subcontinent heats up more as compared to the Indian ocean as the sun is directly over the landmass. Flooding in key agriculture production areas can lead to widespread damage to crops, fencing and loss of livestock. This affects the farming community just as much as a famine does.

## **SIGNIFICANCE**

Climate is irregular and change unpredictably. Farmers pray for good rain every year as it provides the necessary irrigation to set agriculture in motion. Excessive rainfall can affect crop productivity in various ways, including direct physical damage, delayed planting and harvesting, restricted root growth, oxygen deficiency and nutrient loss. Balancing proper watering is key to the best crops possible.

## **OVERVIEW**

Weather plays a very important role in agriculture production and has an influence on the growth development, and yield of crops. Weather aberration can cause physical damage to crops and soil erosion. The quality of crops from the field to the market depends on the weather. Bad weather can adversely affect the quality of crop during transportation or storage. The findings brought about by shifting through databases and studies to conclude things like this in agricultural processes can bring about remarkable changes.

## **LITERATURE SURVEY**

Machine learning takes weather data and builds relationships between the available data and the relative predictors. ML can help improve physically grounded models, and by combining both approaches, they can get accurate results. Sophisticated models and ML are used to forecast the weather using a combination of physical models and measured data on huge computer systems

## **PAPER 1. RAINFALL PREDICTION USING MACHINE LEARNING TECHNIQUES**

Rainfall prediction is not an easy job especially when expecting the accurate and precise digits for predicting the rain. The rainfall prediction is commonly used to protect the agriculture and production of seasonal fruits and vegetables and to sustain their production and quality in relation to the amount of rain required by them. The rainfall prediction uses several networks and algorithms and obtains the data to be given to the agriculture and production departments.

The rainfall forecasting is prevailing as a popular research in the scientific areas in the modern world of technology and innovation; as it has a huge impact on just the human life but the economies and the living beings as a whole. Rainfall prediction with several Neural Networks has been analyzed previously and the researchers are still trying hard to achieve the more perfect and accurate results in the field of rainfall prediction.

## **PAPER 2. A STUDY OF RAINFALL PREDICTION TECHNIQUES**

The crop seasons are Rabi, Kharif and Zaid. Linear regression method is applied for early prediction. Here, Rabi and kharif were taken as variables if one variable was given then other can be predicted using linear regression. Standard deviation and Mean was also calculated for future prediction of crop seasons. This implementation will be used for farmers to have an idea of which crop to harvest according to crop seasons. Kar, Kaveri, Neelima Thakur, and Prerika Sanghvi has used the fuzzy logic approach for the prediction of rainfall on the data of temperature in a geographic location. The fuzzy model has been applied Due to other climatic factors the prediction is not accurate so they have considered other influencing factors like humidity also analyzed the advantages of fuzzy system over other techniques.

## **PAPER 3. EXPLORATORY DATA ANALYSIS AND FORECASTING THE INDIAN WEATHER USING MACHINE LEARNING**

In India a few investigations have been completed to decide the progressions on relationship of temperature with environmental modification. They inferred that it is observed no broad inclination can be seen increment as well as lessening in these readings. The breaking down of the arrangement of time of average yearly readings done a bunch of 8 weather stations of India. the patterns of decadal in environment all across India provided the primary signs of the daytime deviation of weather patterns across India is very not moderately the same as which saw across numerous different pieces around the world.

## **PAPER 4. PREDICTING RAINFALL FOR AGRICULTURE IN INDIA USING REGRESSION**

In the past, there are many types of research conducted to analyse rainfall and their effects on agriculture by various research groups. There has been much research that has been done for predicting the rainfall. While using well trained machine learning algorithm, and increasing the efficiency to predict rainfall has shown an upward trend. Having prior information about the rainfall can be useful. In research, several models were used for rainfall prediction and the findings depicted that Artificial Neural Network makes its most favoured approach due to nonlinear relationships in rainfall data and its ability to grasp from past. So the prediction enhanced the average profit done by the farmers and can reduce the migration of the labour due to the loss from the village.

### **TECHNIQUES USED**

We will be using the classification of algorithms such as Decision tree, Random Forest, KNN and Boost. We will train and test data with these algorithms. Data set is collected. After the analysis of collected data, then do the exploratory analysis. Classify the data and testing was done. Some of the Machine Learning library are imported. Analysis the classification algorithm at the forest area, costal area. Then finally rainfall analysis was identified

### **CONCLUSION**

Main idea is to understand normal rainfall, default rainfall, excess rainfall and seasonal rainfall. This analysis will provide useful information for farmers to access the availability of water and create the storage accordingly. The scientific research and the analysis paved the way to determine the proper onset and withdrawal of monsoon results which were used for land preparation and sowing.