

# **LITERATURE SURVEY**

## ***Exploratory Analysis Of RainFall Data In India For Agriculture***

Urmay Shah et. al, have applied different machine learning techniques like a decision tree, random forest, KNN, SVM on rainfall data [1]. The work is centred to offer the insights of climate to the clients, such as Agriculturists, researchers and so on, to understand the significance of modifications in weather and environment parameters like precipitation, temperature, humidity and so forth. Precipitation estimate is one of the essential investigations in area of meteorological studies.

Kaggle[2] supports different types of datasets publication formats, it inspires dataset publishers to split their data in an accessible and non-proprietary format if possible. kaggle also supports different kind of file types they are CSVs, JSON, SQLite, Archives, BigQuery and other file formats. We can upload the data from many sources, such as our local machine, remote files, Github repository, and notebook outputs. Even though there are other datasets such as Weather forecast dataset, CORGIS dataset and others [3][4] which give rainfall Precipitation along with temperature , wind speed, wind direction, Kaggle dataset is the most widely used for rainfall prediction compared to other datasets.

CMAK Zeelan Basha et. al, have anticipated rainfall utilizing deep learning methods [5]. Two deep learning methods which were utilized are Multilayer Perceptron and Auto-Encoders. Auto -Encoders are capable in estimating time series by performing the feature extraction [6] and the Multilayer Perceptron is utilized in expectation and classification tasks. In India, Agribusiness is the pivotal component for survival. For farming, precipitation is most extreme significant. These

days precipitation forecast has ended up essential issue. Forecast of precipitation offers ubiquity to people and secures in progress about precipitation to take safeguards to secure their crop from precipitation. Machine Learning models are inside the basic valuables in predicting rainfall. A few of the foremost imperative Machine Learning calculations are ARIMA Model (Auto-Regressive Integrated Moving Average), Support Vector Machine, Logistic Regression and Artificial Neural Network.

Lince Rachel Varghese et.al, have utilized a time-series assessment to separate the dispositions in occasional precipitation of the relative multitude of regions of Kerala and its effect is analysed through insights designs [7]. A period arrangement forecasting is utilized to depend on the future precipitation from 2020 to 2030 of all locales of Kerala. The month to month precipitation realities of 14 locale of Kerala structure for one year from 2008 to 2019 is thought about. The realities are surveyed as seasons all in all with 4 quarters. The reason for this class and assessment is to find the climatic varieties of regions that have an effect at the Hevea (Rubber) development.

The Landslides are viewed as cataclysmic natural risks commonly standard inside the Indian Himalayas. Larger part of avalanches added roughly through drawn out or hefty precipitation. Shikha Srivastava et. al, have utilized linear regression calculation for precipitation prediction and have discussed the early admonition of avalanche event [8]. Linear-regression is the most broadly utilized calculation in insights and AI for assessing the connection between the free factors (Input) and the dependent factor (Output).

This offers the overall generally execution examination of various device acquiring information on calculations by and large with linear-regression, lower returned propagation neural community (BPNN), aid vector regression (SVR) and lengthy quick time period reminiscence network (LSTM) used to gauge precipitation which can be in evaluation with the precipitation edges to anticipate avalanche

event. The assessment has utilized antecedent precipitation data obtained from Narendra Nagar, in Tehri Garhwal area of Uttarakhand all through 1901 to 2015. Inferable from the compelled consistency of quickly condition of the climate, every day precipitation perceptions are collected into month to month indexes for further analysis.

Chandrasegar Thirumalai et. al has used linear regression technique for the early prediction of rainfall. Linear regression analysis is used for predicting the unknown value of a season from the known value of another season [9]. This discusses the rate of rainfall in preceding years regular with numerous plants seasons like rabi, Kharif, zaid and predicts the rainfall in future seasons. Different categories of data by are measured by linear regression method in metrics for effective understanding of agriculture in India.

Meshram et al. [10] studied long-term rainfall data of Ken River Basin, Central India, over the period 1901-2010; this was centred on water resource planning for agriculture and provided useful results for sustainable water utilization policy making.

In India, climate change is causing adverse impact on monsoon timing, temperature, and other weather parameters, thus imposing potential impacts on the atmosphere. Even a marginal increase in temperature can result in heatwave incidents and serious damage and alternatives in species of animals and plants [10]. The pattern and extent of warming over India or the Indian subcontinent over the previous century are comprehensively steady with the worldwide pattern and magnitude.

Parliamentary Standing Committee on Agriculture has observed that extreme weather events are costing India \$9-10 billion annually. Also observed that climate change is projected to impact agricultural productivity with increasing severity from 2020 to the end of the century. Changes in the intensity, frequency, and seasonality of climate patterns, extreme weather events, rainfall pattern and river flow etc. are likely to impact agriculture sector.