**Machine Learning based Rainfall Prediction**

Rainfall prediction is the one of the important technique to predict the climatic conditions in any country. This paper proposes a rainfall prediction model using Multiple Linear Regression (MLR) for Indian dataset. The data taken from 1901 to 2015 monthly wise. The input data is having multiple meteorological parameters and to predict the rainfall in more precise. The Mean Square Error (MSE), accuracy, correlation are the parameters used to validate the proposed model. From the results, the proposed machine learning model provides better results than the other algorithms in the literature. It is demanding responsibility of meteorological department to predict the frequency of rainfall with uncertainty. It is complicated to predict the rainfall accurately with changing climatic conditions. It is challenging to forecast the rainfall for both summer and rainy seasons.

**EXISTING SYSTEM:**

In the Existing system used back propagation neural network for rainfall prediction. This model used by Xianggen Gan and he was tested using the dataset from 1970 to 2000 which has 16 meteorological parameters. During network training the target error is set as 0.01 and learning rate is set as 0.01. This model implemented on mat lab neural network. Genetic Programming (GP) and MCRP were compared on 21 different datasets of cities across Europe. Daily rainfall data for 10 years were taken as training data and one year rainfall data were taken as testing data.

**DISADVANTAGES OF EXISTING SYSTEM:**

* The disadvantage of MCRP is that it predicts accurate only for annual rainfall when compared with monthly rainfall prediction.
* The assumptions which are made by the multiple linear regression are: linear relationship between the both the descriptive and independent variables, the highly correlated variables are independent variables, yi is calculated randomly.
* Weather is extremely difficult to forecast correctly.
* It is expensive to monitor-so many variables from so many sources.
* The computers needed to perform the millions of calculations necessary are expensive.

**Algorithm**: Markov-chain extended with rainfall prediction (MCRP), Genetic Programming

**PROPOSED SYSTEM:**

The proposed method is based on the multiple linear regression. The data for the prediction is collected from the publically available sources and the 70 percentage of the data is for training and the 30 percentage of the data is for testing. Multiple regression is used to predict the values with the help of descriptive variables and is a statistical method. It is having a linear relationship between the descriptive variable and the output values. The number of observation is indicated by *n*. The dependent variable is *yi* and the descriptive variable is *xi*. *β0* and *β p* are the constant y intercept and slop of descriptive variable respectively.

**ADVANTAGES OF PROPOSED SYSTEM:**

* The error free prediction provides better planning in the agriculture and other industries.
* The linear relationship between the both the descriptive and independent variables, the highly correlated variables are independent variables, yi is calculated randomly and the mean and variance are 0 and σ.
* The ability to determine the relative influence of one or more predictor variables to the criterion value
* Ability to identify outliers or anomalies

**Algorithm**: Multiple Linear Regression (MLR)

**SYSTEM REQUIREMENTS:**

**HARDWARE REQUIREMENTS:**

* System : Intel Core i3.
* Hard Disk : 1 TB.
* Monitor : 15’’ LED
* Input Devices : Keyboard, Mouse
* Ram : 8 GB.

**SOFTWARE REQUIREMENTS:**

* Operating system : Windows 10.
* Coding Language : Python
* Tool : PyCharm, Visual Studio Code
* Database : SQLite

**REFERENCE:**

R.Kingsy Grace,B.Suganya Department of Computer Science and Engineering Sri Ramakrishna Engineering College Coimbatore, India" **Machine Learning based Rainfall Prediction** " 2020 6th International Conference on Advanced Computing and Communication Systems (ICACCS) Date Added to IEEE Xplore: 23 April 2020 INSPEC Accession Number: 19557097 DOI: 10.1109/ICACCS48705.2020.9074233