Title :

Exploratory Analysis Of RainFall Data In India For Agriculture

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PROBLEM STATEMENT:

Currently, the agricultural sector is going through most stressed phase in the last three decades. Agriculture is the major issue and we don't think about it because we get food in timely manner. In order to improve the agricultural sector, we need to analysis the rainfall data because the economic growth of each year depends on the amount of duration of rainfall.

Irregular heavy rainfall may lead to the destruction of crops, heavy floods that can cause harm to human life. It is important to exactly determine the rainfall for effective use of water resources, crop productivity, and pre-planning of water structures.

In our analysis we are trying to understand the behavior and patterns of rainfall in India over the years, by months and based on that we can give recommendation to plant crops. This comparative study is conducted concentrating on the following aspects: modelling inputs, Visualizing the data, modelling methods, and preprocessing techniques. The results provide a comparison of various evaluation metrics of these machine learning techniques and their reliability to predict rainfall by analysing the weather data.

ABSTRACT:

The present investigation included rainfall probability analysis of previous 34 years rainfall data (1980-2013) with the prime objective for prediction of annual rainfall of Allahabad district. The observed values were computed by weibulls formula (1939). The annual rainfall values were estimated by proposed prediction models Viz. Gumbel and Log Normal (Chow 1964). The rainfall data in the above distribution and their corresponding rainfall events were estimated at 2.9, 11.4, 20.0, 40.0, 51.4, 60.0, 80.0 and 97.1 percent probabilities level. The goodness of fit wastested by Chi-square test. It clearly indicates that the Gumbel distribution was found to be best model for predicting the annual rainfall (mm). While Log Normal distribution is fairly close to the observed annual rainfall (mm).

LANGUAGES USED:

- Python

LITERATURE SURVEY:

PROJECT TITLE	*AUTHOR*	*OBJECTIVE/OUTCOME*
Agriculture India farm department and agricultural tips (2008)	Dí. P. ChandíaShekaía	To enhance awareness about source of extension, information and services among farmers. • To encourage farmers to avail extension services through ICT means. • To enhance farmers knowledge on agricultural credit, insurance and legal aspect
Spatial analysis of Indian Summer monsoon Rainfall(Mar 26,2014)	Markand Oza C.M.Kishtawal	Understanding the variability in rainfall, analysis of Indian Summer monsoon rainfall using Spatial resolution
Regional Rainfall prediction using support vector machine classification of Large-scale Precipitation(2020)	Eslam A.Hussein, Mehídad Ghaziasgaí, Chíistopheí Thíon	Large-scale precipitation maps can under some conditions give useful information for predicting regional rainfall..
Machine Learning based Rainfall Prediction	Grace, R. Kingsy; Suganya, B. (2020). [IEEE 2020 6th International Conference on Advanced Computing and Communication Systems (ICACCS) - Coimbatore, India (2020.3.6-2020.3.7)] 2020 6th International Conference on Advanced Computing and Communication Systems (ICACCS) - Machine Learning based Rainfall Prediction., (), 227– 229. doi:10.1109/ICACCS487 05.2020.9074233	This paper explains the proposed method MLR [Multiple Linear Regression] based Rain Fall Prediction. The proposed method predicts the rainfall for the Indian dataset using multiple linear regression and provides improved results in terms of accuracy, MSE and correlation. The data for the prediction is collected from the publicly available sources and the 70 percentage of the data is for training and the 30 percentage of the data is for testing.
Machine Learning Techniques For Rainfall Prediction: A Review	2017 International Conference on Innovations in information Embedded and Communication	Intention of Review work and comparison of different approaches and algorithms

	Systems (ICIIECS) - Aakash Parmar, Kinjal Mistree, Mithila Sompura - Department of Computer Engineering, CGPIT, Uka Tarsadia University, Bardoli, Surat, India	used by researchers for rainfall prediction is shown in a tabular form. this paper is to give nonexperts easy access to the techniques and approaches used in the field of rainfall prediction.
Hybrid Prediction Models for Rainfall Forecasting	Singh, Gurpreet; Kumar, Deepak (2019). [IEEE 2019 9th International Conference on Cloud Computing, Data Science & Engineering (Confluence) - Noida, India (2019.1.10-2019.1.11)] 2019 9th International Conference on Cloud Computing, Data Science & Engineering (Confluence) - Hybrid Prediction Models for Rainfall Forecasting. , (), 392–396. doi:10.1109/CONFLUENCE.2019.8776885	In this study, several hybrid forecasting models are proposed that are combinations two feature selection techniques, Gradient boosting and Random forest with various machine learning techniques, viz Support Vector Machine (SVM), adaboost, Neural Network (NN) and K-Nearest Neighbour (KNN). These model have been applied to the past 11 years (2007 2017) weather data to predict rainfall in town of carry, North caroliana. The performances of these algorithms have been computed on different metrics F-score, precision, recall, accuracy. Empirical findings have shown that the proposed model i.e GB-Adaboost is superior when compared with others without feature selection.