Literature Survey

Journal, Research Paper, Publication & Article Title	Citation	Description
1. 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.

2. Machine Learning Techniques For Rainfall Prediction: A Review	2017 International Conference on Innovations in information Embedded and Communication Systems (ICIIECS) - Aakash Parmar, Kinjal Mistree, Mithila Sompura - Department of Computer Engineering, CGPIT, Uka Tarsadia University, Bardoli, Surat, India	Review work and comparison of different approaches and algorithms used by researchers for rainfall prediction is shown in a tabular form. Intention of this paper is to give non-experts easy access to the techniques and approaches used in the field of rainfall prediction.
3. 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.
4. A Fundamental Study on Suicides and Rainfall Datasets Using basic Machine Learning Algorithms	U. Harita;V. Uday Kumar;Dorababu Sudarsa;G Rama Krishna;Cmak Zeelan Basha;B Srinivasa S P Kumar; (2020). *4th International Conference on Electronics, Communication and Aerospace Technology (ICECA), (), –* . doi:10.1109/iceca49313.2020.9297440	Rainfall prediction and suicide analysis is presented in the research work. The objective of this research work is to reduce the suicides due to rainfall which acquires huge unexpected loss to farmers. This work makes us realize the fact that proper rainfall prediction can avoid the economical loses and reduce the suicides among the farmers in India.

5. Analysis of rainfall and temperature trends in northeast India	S. K. Jain; Vijay Kumar; M. Saharia, WRD & M, Indian Institute of Technology, Roorkee, Uttarakhand, India b Ministry of Earth Sciences, New Delhi, India c Earlier at WRS Division, National Institute of Hydrology, Roorkee, India d Department of Civil Engineering, National Institute of Technology, Silchar, Assam, India. (2012). *0–0.* doi:10.1002/joc.3483	This journal has examined trends in monthly, seasonal, and annual rainfall and temperature on the subdivision and regional scale for the north-east region of India which is one of the highest rainfall-receiving regions of the world. Although there was large variability in magnitude and direction of trend of rainfall data from one meteorological subdivision to another, overall, no clear pattern has emerged, either spatially or temporally.
6. Clock hour correction effect on extreme value analysis of rainfall on Western Coast of India	Dauji, Saha (2019).*ISHJournal of Hydraulic Engineering, (), 1–13.* doi:10.1080/09715010.2019.1687338	Continuous hourly rainfall data from a monsoon rainfall site on the western coast of India was taken and the effect of time discretization of rainfall records on the EVA was studied. The objective was to evaluate CHCF from limited continuous hourly data from the site. The effect of the process of data selection (FW or SW) as well as the data length (17 or 68), on EVA was also examined.
7. Heuristic Prediction of Rainfall Using Machine Learning Techniques	Thirumalai,Chandrasegar; Harsha, K Sri; Deepak, M Lakshmi; Krishna, K Chaitanya (2017). *[IEEE 2017 International Conference on Trends in Electronics and Informatics (ICOEI) - Tirunelveli, India (2017.5.11-2017.5.12)] 2017 International Conference on Trends in Electronics and Informatics (ICEI), 1114-1117.* doi:10.1109/ICOEI.2017.830884	The paper measures various categories of data by linear regression method in metrics for effective understanding of agriculture in India. A real dataset has been, which consists of past year's rainfall rate according to various seasons. Results of this application help farmers to make correct decisions to harvest a particular crop accordingly to crops seasons.

8. Analyzing trend and forecasting of rainfall changes in India using nonparametrical and machine learning approaches	Praveen, Bushra; Talukdar, Swapan; Shahfahad, ; Mahato, Susanta; Mondal, Jayanta; Sharma, Pritee; Islam, Abu Reza Md. Towfiqul; Rahman, Atiqur (2020). *Scientific Reports, 10(1), 10342–*. doi:10.1038/s41598-020-67228-7	Based on the change point year, the rainfall variability and trend analysis were carried out for pre and post change point phase. The rainfall variability was increased significantly in most of the meteorological sub-divisions after post change point and similar kinds of results were found when the rainfall trend was analyzed for post change point. To get better results of trend analysis, the innovative trend analysis was employed. The results show that most of the sub-divisions were recorded significant negative trend.
9. Study of short term rain forecasting using machine learning based approach	Balamurugan, M. S.; Manojkumar, R. (2019). *Study of short term rain forecasting using machine learning based approach. Wireless Networks, (), –.* doi:10.1007/s11276-019-02168-3	In this study, using machine learning it has been observed that forecast was able to achieve much better rainfall prediction comparative to statistical methods. The model was deployed in a real time node set up using a Lora WAN and forecasting was done using Logistic Regression to find the probability of Rain. It also has minimal error as observed in RMSE calculation
10. A Study on Rainfall Prediction Techniques.	International Journal of Scientific Research in Engineering and Management (IJSREM) , C K	This study allows researchers to attain the measure of error using the regression. It will be easy to compare accuracy. Some methods discussed

	Gomathy M.E (CSE) MBA (IT and Mgmt) Ph.D (CSE) Department of computer science and engineering SCSVMV University	are difficult for the long-term rainfall prediction.
11. An extensive evaluation of seven machine learning methods for rainfall prediction in weather derivatives	Cramer, Sam; Kampouridis, Michael; Freitas, Alex A.; Alexandridis, Antonis K. (2017). *Expert Systems with Applications, 85(), 169–181.* doi:10.1016/j.eswa.2017.05.029	The results show that there is sufficient evidence that accumulating rainfall amounts leads to superior predictive power than predicting using the daily amounts. Furthermore, when applied to the accumulated data, Support Vector Regression was the best algorithms in general.
12. Prediction of heavy rainfall over Chennai Metropolitan City, Tamil Nadu: Impact of microphysical parameterization schemes	Singh, K.S.; Bonthu, Subbareddy; Purvaja, R.; Robin, R.S.; Kannan, B.A.M.; Ramesh, R. (2017). *Atmospheric Research, (), S0169809517303009–.* doi:10.1016/j.atmosres.2017.11.028	The objective of this study was to evaluate the impact of six microphysical parameterization schemes on heavy rainfall forecasts over the Chennai city using nested domain of the WRF-ARW mesoscale modeling system.