

Literature Survey

Professional Readiness for Innovation, Employability and Entrepreneurship [Nalaiya Thiran]

Project Title - *Exploratory Analysis of RainFall Data in India for Agriculture*

Team Members-

1. Shanmugasundaram B
2. Sivakumar K
3. Santhosh Kumar L
4. Saravanakumar A

Industry Mentors - Lalitha Gayathri

Faculty Mentor – Jayakumar D

| Journal, Research Paper, Publication & Article Title | Citation | Description |
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| 1. Machine Learning based Rainfall Prediction | Grace, R. Kingsy; Suganya, B. (2020). <i>[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., ()</i> , 227–229. doi:10.1109/ICACCS48705.2020.9074233 | 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. |
| 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. |

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| <p>3. Hybrid Prediction Models for Rainfall Forecasting</p> | <p>Singh, Gurpreet; Kumar, Deepak (2019). <i>[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/CONFLUEN</i>CE.2019.8776885</p> | <p>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 carolina. 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.</p> |
| <p>4. A Data-Driven Approach for Accurate Rainfall Prediction</p> | <p>Manandhar, Shilpa; Dev, Soumyabrata; Lee, Yee Hui; Meng, Yu Song; Winkler, Stefan (2019). <i>IEEE Transactions on Geoscience and Remote Sensing, (), 1–9. doi:10.1109/TGRS.2019.29</i>26110</p> | <p>In the paper, different ground-based weather features that are important for the prediction of rain events have been identified and a detailed analysis is done to study the interdependence of these variables. Seasonal and diurnal factors into the model, along with weather variables have been incorporated.</p> |
| <p>5. Clock hour correction effect on extreme value analysis of rainfall on Western Coast of India</p> | <p>Dauji, Saha (2019).<i>ISH Journal of Hydraulic Engineering, (), 1–13. doi:10.1080/09715010.20</i>19.1687338</p> | <p>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 recordson 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.</p> |

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| <p>6. Heuristic Prediction of Rainfall Using Machine Learning Techniques</p> | <p>Thirumalai, Chandrasegar; Harsha, K Sri; Deepak, M Lakshmi; Krishna, K Chaitanya (2017). <i>[IEEE 2017 International Conference on Trends in Electronics and Informatics (ICOEI) - Tirunelveli, India (2017.5.11-2017.5.12)]</i> 2017 <i>International Conference on Trends in Electronics and Informatics (ICEI)</i>, 1114-1117. doi:10.1109/ICOEI.2017.830884</p> | <p>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.</p> |
| <p>7. Analyzing trend and forecasting of rainfall changes in India using nonparametrical and machine learning approaches</p> | <p>Praveen, Bushra; Talukdar, Swapan; Shahfahad, ; Mahato, Susanta; Mondal, Jayanta; Sharma, Pritee; Islam, Abu Reza Md. Towfiqul; Rahman, Atiqur (2020). <i>Scientific Reports</i>, 10(1), 10342–. doi:10.1038/s41598-020-67228-7</p> | <p>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 subdivisions 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 subdivisions were recorded significant negative trend.</p> |
| <p>8. Study of short term rain forecasting using machine learning based approach</p> | <p>Balamurugan, M. S.; Manojkumar, R. (2019). <i>Study of short term rain forecasting using machine learning based approach. Wireless Networks</i>, (), –. doi:10.1007/s11276-019-02168-3</p> | <p>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</p> |