PANIMALAR ENGINEERING COLLEGE

Chennai – 600 123

Department of Computer Science & Engineering

CS 8811 - Project Work (2021 -2022)

ZEROTH REVIEW FORM

TILE OF THE PROJECT

Rainfall Prediction using ARIMA and Linear Regression model.

ABSTRACT

Rainfall is the greatest of nature's gifts for our daily lives and the most crucial climate element affecting human lives with farmers and agriculture complex systems. Rainfall provides water for all living things. But in many places in the world, the rain has become a menace. Heavy rainfall and flash floods are still significant issues for several cities in India, especially Tamil Nadu. Rainfall forecasts are frequently used to develop an early warning system of the farmers and agriculture. The accurate forecasting method is needed to produce accurate predictions of rainfall. Several methods have been introduced for univariate time series data. In classical statistics seasonal time series data have been used frequently. The time series models are also developed based on machine learning approaches such as extreme Linear Regression algorithm and support vector machine (SVM) algorithm. In this method, such as time series ARIMA needs a tight

assumption of stationarity to provide a good prediction. In contrast, machine learning methods do not require this assumption for forecasting purposes. The objective of this study is to examine whether SVM without stationary assumption can outperform the classical ARIMA. This study provides insight of SVM for rainfall forecasting by performing training and testing data method. We did not use the simulation method for models comparison. We use the real data from Indian government website (www.data.gov.in) and compare the model quality based on several criteria in ARIMA.

TECHNOLOGY

Operating System - Windows 8/10
Front End - CSS
Language - Python(3.10) Version.
Server - Flask.

LIST OF REFERENCES

- Cmak Zeelan Basha, Nagulla Bhavana, Ponduru Bhavya, Sowmya V, (Year 2020), *"Rainfall Prediction using Machine Learning & Deep Learning Techniques"*, IEEE, Coimbatore, 10.1109/ICESC48915.2020.9155896 .
- Arnav Garg, Himanshu Pandey, (Year 2019), *"Rainfall Prediction using Machine Learning"*, International Journal of Innovative Science and Research Technology, Kanchipuram, Volume 4.
- Refonaa.J,Lakshmi.M,Dhamodaran.S,Teja Surya, Pradeep.T.N.M, (year 2019), *"Machine Learning Techniques for Rainfall Prediction Using Neural Network"*, Journal of Computational and Theoretical

Nanoscience, American Scientific Publishers, Chennai , Volume 16, https://doi.org/10.1166/jctn.2019.8185 .

- Muchamad Taufiq Anwar, Saptono Nugrohadi, Vita Tantriyati, Vikky Aprelia Windarni,(Year2020), *"Rain Prediction Using Rule-Based Machine Learning Approach",* Advance Sustainable Science Engineering and Technology, Universitas PGRI Semarang, 0.26877/asset.v2i1.6019 .
- Shilpa Manandhar; Soumyabrata Dev; Yee Hui Lee; Yu Song Meng, (Year 2019), *"A Data-Driven Approach for Accurate Rainfall Prediction"*, IEEE .
- "Rainfall Prediction using Machine Learning Approach: A Case Study for the State of Odisha", (Year 2020), *"Rainfall Prediction using Machine Learning Approach: A Case Study for the State of Odisha"*, Indian Journal of Natural Sciences, Odisha, Vol.10 .
- Wanie M.Ridwan,Michelle Sapitang,Awatif Aziz, (Year 2021), *"Rainfall forecasting model using machine learning methods: Case study Terengganu, Malaysia",* Ain Shams Engineering Journal, Malaysia, Volume 12, Pages 1651-1663.
- B. Suganya, R. Kingsy Grace, (Year 2020), *"Machine Learning based Rainfall Prediction",* 6th International Conference on Advanced Computing and Communication Systems, Coimbatore, IEEE, 10.1109/ICACCS48705.2020.9074233 .
- Y Zhao, X Meng, T Qi, Y Li, G Chen, D Yue, F Qing, (Year 2022), "*AI-based rainfall prediction model for debris flows",* Gansu Tech Innovation Centre for Environmental Geology and Geohazard Prevention, China, 0.1016/j.enggeo.2021.106456 .
- Emilcy Hernández,Victor SanchezAnguix,Vicente Julian,Javier Palanca,Nestor Duque, (Year 2016), "Rainfall Prediction: A Deep Learning Approach", International Conference on Hybrid Artificial Intelligence Systems, United Kingdom, 10.1007/978-3-319-32034-2_13.