Team ID	PNT2022TMID16626
Project Name	Project - Exploratory Analysis of Rain Fall Data in India for Agriculture

PROBLEM STATEMENT

India is a global **agricultural** powerhouse. Rain is beneficial for crops and fields however there is an "**absolute**" amount of rainfall in any given growing season for most crops. If the average rainfall is much lower or higher than the ideal, it can lead to significant problems, from drowned crops to lower yields. Rainfall forecasting is important otherwise, it may lead to many disasters. Irregular heavy rainfall may lead to the destruction of crops. But accurate rainfall prediction has become very complicated in recent times due to drastic variability in climatic changes. Hence it is important to exactly determine the rainfall for the effective use of water resources, crop productivity, and pre-planning of water structures.

ABSTRACT:

We use **APPLIED DATA SCIENCE** to solve this problem. There are so many algorithms available such as Decision tree, Random Forest, KNN, Xgboost, etc. We will test and train the data with one of these algorithms. From these, the best algorithm is selected and the model is developed. We visualize the data and models. The results provide us with various evaluation metrics of the Machine Learning techniques.

LANGUAGES USED:

 Python = 100% (Jupyter notebook)

LITERATURE SURVEY:

PROJECT TITLE	AUTHOR	OBJECTIVE
Exploratory data Analysis of Indian Rainfall Data	Anusha Gajinkar	This Study shows that India has two monsoon rainfall seasons one is the northwest monsoon and the second one is the southeast monsoon.

A Time-series based Prediction Analysis of Rainfall Detection	Lince Rachel Varghese, K. Vanitha (Dept. of CS., DR.G.R.Damodaran College, Coimbatore, India)	A time series analysis was used to extract the trends in seasonal rainfall. Data mining, and data analysis is used on meteorological data to find hidden patterns in the data.
Rainfall Prediction Using Machine Learning	Akash Gupta, Hitesh Kumar Mall and S Janarthanan.	The findings demonstrate how different machine-learning systems perform a range of assessment parameters, as well as their capacity to forecast rainfall using weather data Analysis.
Study on Rainfall Prediction of Yibin City Based on GRU and XGBoost	Jian Rong Ban, Qi Gou and Ya Shi Li	Experiments have found that the mean absolute error (MAE) of GRU and XGBoost models are 0.088 and 0.013 respectively; The mean square error (MSE) is 0.016 and 0.0003 respectively; The mean average absolute percentage error (MAPE) was 58.22 and 14.85 respectively.
Spatial analysis of Indian Summer monsoon Rainfall	Markand Oza C.M.Kishtawal	Understanding the variability in rainfall, analysis of Indian Summer monsoon rainfall using Spatial resolution