

Project Design Phase-I
Proposed Solution Template

Date	24 September 2022
Team ID	PNT2022TMID10910
Project Name	Project - Exploratory Analysis of Rain Fall Data in India for Agriculture.
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To develop and train the machine learning model and then verify the outcomes of Exploratory Analysis of Rainfall in India for Agriculture.
2.	Idea / Solution description	Primarily, data cleaning and other future Engineering process are carried out then Applying the classification/Regression algorithms by different models, which can help in predicting the rainfall. Dimensionality reduction (PCA) technique should be used. To achieve such results, will be using five various regression or classification models and select the best one among - Multiple linear regression, KNN regression, SVM (Support Vector Machine) regression, DTR (Decision tree regression), RFE (Random Forest regression).
3.	Novelty / Uniqueness	<p>1.To create such progressive scenarios we need to implement conventional or machine learning models with high accuracy that are important to achieve the results.</p> <p>2. After applying the models in the data, after that comparison will be done, it is to testify that; selected model can do prediction of rainfall with or above 70 percent of correctness that is R-squared score and RMSE (Root Mean Square Error) less than 20 percent of compared to the target variable's mean value.</p> <p>3. Creating, optimizing and cross validating the algorithms of the new model.</p>
4.	Social Impact / Customer Satisfaction	1.The prediction enhanced the average profit done by the farmers and can reduce the migration of the labour from the village, due to the losses in agriculture.

		<p>2. The farmers produce the crops in the three major seasons with the insight of prediction.</p> <p>3. The prediction can also help the farmer to take necessary measures for the future aspect.</p>
5.	Business Model (Revenue Model)	<p>1. Develop a model that can predict the rainfall that will help the agriculture sector, so that rainfall doesn't become a barrier for the agricultural production.</p> <p>2. Additionally, this prediction can also be helpful to many sectors like forest plantation and tourism.</p>
6.	Scalability of the Solution	<p>1. The prediction enhances various upgradable features for its scalability and efficiently in various fields.</p> <p>2. Accurate prediction can assist farmers in determining when they should work most efficiently in their day-to-day operations. Weather forecast helps in controlling the pests and other crop diseases to spread over the field.</p> <p>3. A good balance of rain and proper irrigation can lead to faster-growing plants, which can cut down on germination time and the length between seeding and harvest.</p> <p>4. Besides disease, rainfall can also determine how fast a crop will grow from seed, including when it will be ready for harvesting.</p>