Project Design Phase-II

Solution Requirements (Functional & Non- functional)

Date	6.11.2022
Team ID	PNT2022TMID46328
Project Name	Estimation of crop yield using data analytics
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Uploading the dataset	In this project we have uploaded crop_production dataset. Display the Manage Uploads page for the Data Set that will receive the data
FR-2	Preparation of dataset	Data collection. Relevant data is gathered from operational systems, data warehouses, data lakes and other data sources. • Uploading data.(dataset) • Cleaning data (prepare data). • Analysing and interpreting (exploration). • Visualizing data (dashboard creation).
FR-3	Exploratory Data Analysis	Exploratory Data Analysis (EDA) is an approach to analyze the data using visual techniques. It is used to discover trends, patterns, or to check assumptions with the help of statistical summary and graphical representations.
FR-4	Building a ML model	• Contextualize machine learning in your organization. • Explore the data and choose the type of algorithm. • Prepare and clean the dataset. • Split the prepared dataset and perform cross validation. • Perform machine learning optimization. • Deploy the model.
FR-5	Model Evaluation	Model evaluation is the process of using different evaluation metrics to understand a machine learning model's performance, as well as its strengths and weaknesses. Model evaluation is important to assess the efficacy of a model during initial research phases, and it also plays a role in model monitoring

FR-6	Data Pre-Processing	Data preprocessing, a component of data preparation, describes any type of processing performed on raw data to prepare it for another data processing procedure. It has traditionally been an important preliminary step for the data mining process. The dataset consists of attributes Moisture, rainfall, Average, Humidity, Mean Temp, max Temp, Min temp, alkaline, sandy, chalky, clay, millet, yield, Outcomes. We will be using the .csv to perform the pre-processing.
FR-7	Prediction Output	Predictive analytics is the process of using data analytics to make predictions based on data. This process uses data along with analysis, statistics, and machine learning techniques to create a predictive model for forecasting future events.

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Its easy to understand the yields crop production dats. It helps the farmers to monitor the health of the crops in real time, create predictive analysis related to future yield.
NFR-2	**Security**	Data security functions to prevent data breaches, reduce risk of data exposure and ensure the ongoing safe and secure use of private data by minimizing exposure risk.
NFR-3	**Reliability**	The reliability of the data determines whether or not businesses can make good decisions with it. If the data is unreliable, It cannot be trusted, which makes it useless to the organizations
NFR-4	**Performance**	Regularly evaluating the performance of our organization can help us understand how much progress we're making toward our goals. A performance analysis is a tool you can use to check important metrics of crop yield for very month or year and make plans for adjustment and improvement.
NFR-5	**Availability**	Data availability in crop yield prediction is a term used by computer storage, manufacturers and storage service providers to describe how data should be available at the required level of performance in situations of predicting data used for crop yield ranching from normal through disastrous.

NFR-6	**Scalability**	The use of technology in agriculture has increased in recent year and data analytics is one such trend that has penetrated into the agriculture field being used for management of crop yield and monitoring crop health.