

Crop Yield Prediction Using Machine Learning Technologies

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Abstract - The primary thing that is essential for survival is agriculture. A key viewpoint for finding a practical and real-world solution to the crop production issue is machine learning (ML). It primarily focuses on estimating the crop yield using a variety of machine learning approaches. Here, Naive Bayes and K Nearest Neighbor are utilised as classifier models, which aid in delivering the highest level of accuracy. By taking into account variables like temperature, soil, rainfall, acreage, etc., the predictions provided by machine learning algorithms will assist farmers in choosing which crop to cultivate to induce the greatest yield. This ties the technology and agricultural sectors together.

Index Terms— : Crop_yield_prediction, K Nearest Neighbor , Machine Learning, Naive Bayes.

I. INTRODUCTION

In every society and civilization throughout human history, agriculture has been the primary activity since its invention. It is crucial for our survival in addition to being a significant part of the expanding economy. For the Indian economy as well as the future of humanity, it is also a critical sector. A sizable part of employment is also contributed by it. The amount of production required has expanded significantly as time goes on. People use technology in a terribly incorrect manner in order to produce in large quantities. Hybrid plant breeders create new types every day. However, as a crop grown naturally, many cultivars lack the necessary components.

II. OBJECTIVES

This study seeks to forecast crop yields under certain meteorological conditions and, as a result, suggest appropriate crops for that land. Prior to merging these datasets in a structured format and cleaning the data, it collects weather data, crop yield data, soil type data, and rainfall data. Data cleaning improves the quality

of the data and, as a result, productivity overall by removing erroneous, incomplete, and inappropriate data. Exploratory Data Analysis (EDA) should be carried out in order to analyse the entire dataset and summarise its key features. It is used to find trends, identify outliers, and provide graphical representations of different properties. It most critically clarifies the significance of each value, how each attribute depends on the class attribute.

III. METHADODOLOGY

The system uses machine learning to estimate the crop, and Python is used as the programming language because it is well-known for usage in machine learning experiments. In order to learn from past experiences and create a trained model, machine learning employs historical data and knowledge. The model then forecasts the output. The accuracy of the classifier will be improved by a better dataset collecting. Regression and classification techniques used in machine learning have been found to outperform a number of statistical models. The production of crops is entirely reliant on geographical elements such as soil chemistry, rainfall, terrain, soil type, temperature, etc. These elements significantly contribute to raising crop output. the market.

IV. RESEARCH DISCUSSION

The data will be cleaned and preprocessed to remove unnecessary information. The preprocessed data is normalised, which is a process of eliminating, updating, and insertion anomalies to reduce redundancy. The normalised data is then transformed into a format that can be used. The test cases go through the identical preprocessing, normalisation, and format conversion steps as the rest of the data. later, the information gathered the modules we have utilised in our project are Admin, User, and Data

Preprocessing. Prior to being categorised and clustered, the sample data from the sample data is first placed in the knowledge base. The outcome is finally attained.

V. RESULT

It mainly concentrates on crop forecast and yield computation using machine learning techniques. The calculation of accuracy uses a variety of machine learning techniques. The crop prediction for the selected district uses the Naive Bayes and K Nearest Neighbor algorithms. created a technique to anticipate crops using data gathered in the past. The suggested method aids farmers in choosing which crop to plant in the field. This work is done to learn more about the crops that can be used to harvest things in an effective and helpful way. Farmers would benefit from the precise forecasting of several specified crops throughout various districts. As a result, the yield rate of crop production is maximised, which benefits our Indian economy.

Fig 1. Details of Crop

Region Name	Season	Yield Production	Crop Name	Yield Remarks
Telangana	2	115	2	Good

Remarks: Prediction of Yield in that Region : Good

Fig 2. Predicting Result

VI. PUBLICATIONPRINCIPLE

Our nation's economy benefits from the field of agriculture. However, this is lacking, thus all of the latest machine learning technology should be known to our farmers. Numerous machine learning approaches are used in agriculture to increase crop yield rates. These methods aid in the resolution of agricultural issues, yield accuracy determination, and performance enhancement through comparison of yield accuracy between various crops.

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