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Crop Suggestion System for Farmers Using Machine Learning

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Abstract

Our nation's economy is mostly supported by agriculture. The price of the crop has swung more widely in recent years as a result of erratic climatic tendencies and other price swings. Farmers continue to ignore these uncertainties, which leads to waste the crops and results in enormous loss. They are not aware of the crop variety that would be most advantageous to them.Crops suffer harm as a result of people's insufficient understanding of the various crop diseases and their unique treatments. The system is practical and simple to use. It delivers precise outcomes when estimating crop price. To forecast crop price, this system applies the Decision Tree Regression Algorithm from machine learning. Prediction factors include rainfall, wholesale price index, month, and year. As a result, the system The technique provides farmers with a head forecast, which increases their rate of profit and, as a result, the nation's economy. Other modules that are integrated in this system include those for weather forecast, crop and fertilizer advice, and shop, chat portal, and guide.

1. INTRODUCTION

1.1 Introduction

Prices for the crop have fluctuated significantly over the last few years. The frequency of crop damage has increased as a result. This prediction system's primary goal is to help farmers better understand their production and manage value risk. These days,the weather is also incredibly unpredictable. It has an impact on crop productivity as well. The The suggested system will also provide weather predictions, assisting the farmer in making informed decisions about field harvesting and plowing, among other things. Fertilizers also play a significant role. The necessary nutrients are added to the soil by fertilizers, which are then removed from the soil by crops. If fertilizers are not applied, cropyields and production will be fundamentally reduced. Those are the Fertilizers are used to improve the soil's mineral supplement reserveswith elements that crops can quickly absorb and use. Our technology will calculate the amount of fertilizer needed for various crops and will offer a portal for users to purchase fertilizer and seeds. location. They can even obtain the precise address and location of the seed and fertilizer store. Farmers that use the offered fertilizers on the crop recommended bythe growing system will benefit more. Additionally, it will display the crop that will produce the highest yield depending on the details of the cultivation date, month, and place. For the farmers, it will offer multilingual and region-specific reference materials.Having the same techniques

documented will be very helpful for any farmer who is new to this field and wishes to learn from his forebears. Additionally, we've given maps for the farmers to learn new things.Two sorts of maps will be offered by our system. learn about the land's characteristics and where to begin farming. The irrigated and unirrigated areas of the nation are depicted on irrigation maps. The agriculture land view map will give a general overview of the agricultural land that is present in the different Indian states and assist farmers in analyzing the non- agricultural land that may then be improved. Farmers find it simple to grasp maps since they only need to hover over the state they are considering moving to in order to acquire information about that state and make a decision about whether or not to start farming there. It is great for farmers who are new to this industry because the most crucial aspect of farming is to first.

2. Literature Survey

Reference 1: Crop-yield and Price Forecasting using Machine Learning:, In this project, we develop the Decision Tree method, a supervised machine learning method, analyze the data, andmake predictions for a fresh set of data. We also provide a time series analysis of the price and gain for the upcoming year compared to the previous year. The steps involved in machine learning prediction are as follows: 1. Separate the data into training and testing data. 2. Outlining the methods, particularly the decision tree algorithm. 3. Practicing with and evaluating the algorithms. 4. Adding the calculated values to the User Interface. Algorithm with a decision tree

The decision tree formula employs conditional management statements to forecast the final choiceusing a graph or model that resembles a tree and its possible outcomes. Call trees are A formula for approaching discrete-valued target functions uses alearnt perform to represent the call tree. Thesetypes of algorithms are quite significant for inductive learning and are successfully used in a wide range of international jobs. The value of a new transaction is first evaluated against the decision tree to see whether it is legitimate or fraudulent. At that point, a route is duplicated fromthe root node to the output/class label for that transaction. call The outcome of the leaf node's content is determined by the rule. Rules typically take the form of "If condition one and condition two, but not condition three, then result." call tree assists in determining the worst, best, and Expected values for various situations, interpreted simply and with room for the insertion of new hypothetical situations. Steps for constructing acall tree should be the first thing you do. Calculate the entropy of each attribute using the dataset inthe negative, then divide the dataset into subsets using the attribute with the highest gain or lowest entropy at that time to form a call tree node containing that attribute. Finally, apply the rule to the subsets using the remaining attributes to create the call tree..

Reference :2 Crop price prediction using supervised machine learning algorithm: In this study, we used historical rainfall and WPI data to anticipate the price of several crops. We analyzed the historical data, predicted the price for the most recent data, and estimated the price for the upcoming twelve months using the decision tree regressor (supervised machine learning technique). The following modules make up the implementation. A. Data Collection B. Cleaning of Data C. Data investigation D. Machine learning prediction E. Web software 1. Data Collection The crop and rainfall data are gathered from the Indian government's data repository, data.gov.in, to createthe dataset. There are numerous datasets that have data in them. We were able to get data that

included information on the monthly rainfall for each crop and the overall price index.

3. OVERVIEW OF THESYSTEM

3.1 Existing System

In all modules, we have used Python for fundamental programming. It uses Flask for hosting. A chat application uses socket programming. The maps are displayed using Chart.js. Validation is done via JavaScript. We have used APIs to locate fertilizer shops and provide weather forecasts. We constructed a crop recommendation model using the self-created dataset and the machine learning idea of linear regression so that a farmer can learn about the crop that is most appropriate for a certain area. We used a dataset in Fertilizer Recommendation to forecast which fertilizer should be used for the crop disease that is now present. To facilitate farmer, contact with the offered chat application, socket programming is used. A bilingual website is offered using Google API to make it easier to read.

3.1.1 Disadvantages of Existing System

- The suggestion of an existing system is based on soil rather than crop recommendation. according to Production
- Farmers will receive recommendations without taking the growing season into account.

3.2 Proposed System

In this study, the author predicts agricultural prices using a variety of machine learning methods, including Random Forest, Decision Tree, and KNN. All of these algorithms are trained using the Crop Prices dataset, which contains information about crops and weather conditions like rainfall. The screen below displays the dataset's specifics, including the names of the crops, the names of the markets where they are sold, and the prices they fetch.

3.3 Methodology

In this project work, I used five modules and each module has own functions, such as:

1. System Module
2. User Module

3.3.1 Dataset Collection:

The dataset containing images of the chest X-rayimages with the pneumonia affected and without pneumonia i.e., normal are to be classified is split into training and testing dataset with thetest size of 30-20%.

3.3.2 Preprocessing:

Resizing and reshaping the images into appropriate format to train our model.

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3.3.3 Training:

Use the pre-processed training dataset is used to train our model using CNN algorithm along with some of the transfer learning methods..

3.3.4 Classification

The results of our model is display of X-ray images are either with pneumonia or normal.

3.3.5 User Module

Upload Image

The user must upload an image which needs to be classified.

View Results

The classified image results are viewed by user.

4 Architecture

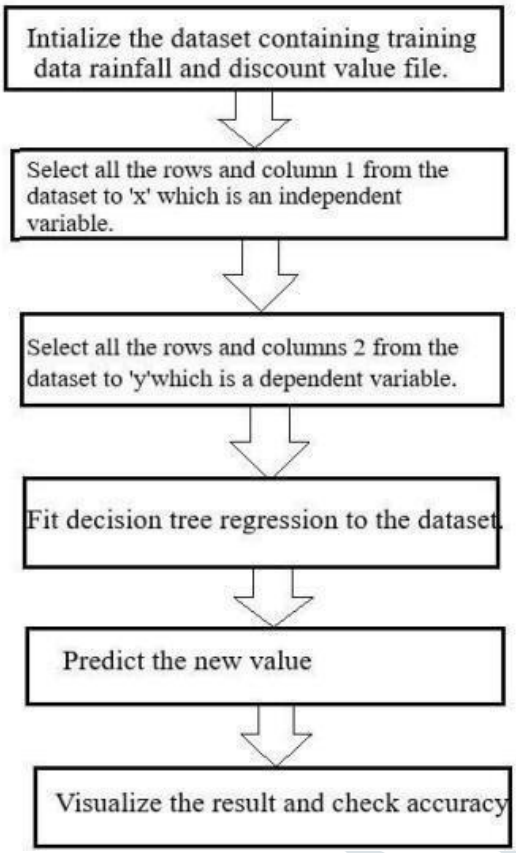
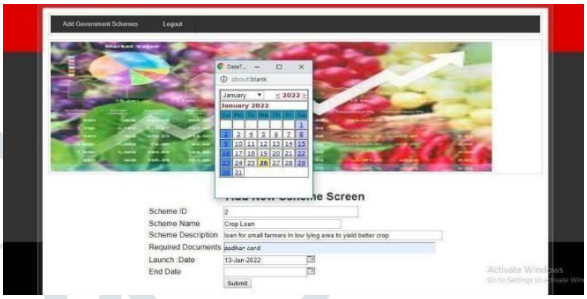


Fig 1: Frame work of proposed method.

5 RESULTS SCREEN SHOTS

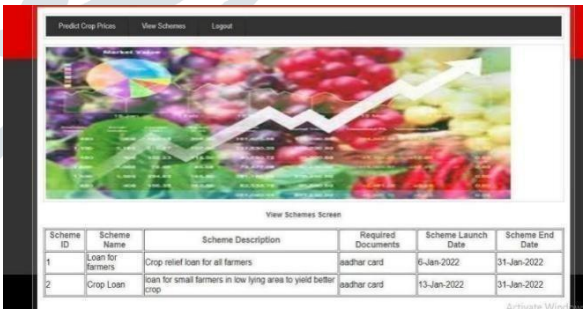
Home Page:

Add Schemes:

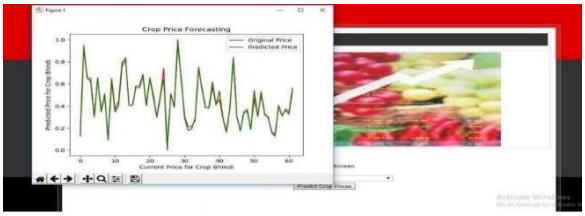


SignUp:

View Schems:



Result:



7. CONCLUSION

✓ This project makes use of machine learning, and KNN, Naive Bayes, and Decision Tree algorithms are used to assess performance. Decision Tree provides a superior yield prediction than the other two algorithms in our proposed model among the three algorithms. Farmers may acquire more familiar with the yield that may not have been developed as the most extreme types of harvests will be secured under this approach. The work demonstrated how machine learning techniques were used to predict harvest costs based on the providedattributes. The developed online application is simple to use, and testing results are above 90% accurate.

Future Enhancement

✓ Under this technique, we can guarantee harvests. Farmers may learnmore about the yield that may not have been developed. The Work demonstrated how machine learning techniques were used to predict harvest costs based on the provided attributes. The developed online application is simple to use, and testingresults are above 90% accurate.

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