Agriculture Prediction Using Machine Learning

Arun Kumar y[1], Prof. K.M Sowmyashree[2]
[1, 2]Dept of Master of Computer Application
[1, 2]PES College of Engineering, Mandya, Karnataka, India

Abstract- *Agricultural intelligent decision system has a positive practical significance for guiding agricultural production, which can provide scientific basis for agriculture.ML technology can effectively improve the performance of intelligent decision system. The research development of the agricultural intelligent decision system is given. The classification of the agricultural decision system is introduced. The frame designation of the intelligent decision system is studied, and the design process is given.*

Keywords- Agriculture prediction, support vector machine, knn algorithm's, Machine learning

I. INTRODUCTION

The reasons behind this includes weather conditions, debt, family issues and frequent change in Indian government norms. Sometimes farmers are not aware about the crop which suits their soil quality, soil nutrients and soil composition. The work proposes to help farmers check the soil quality depending on the analysis done based on data mining approach. Thus the system focuses on checking the soil quality to predict the crop suitable for cultivation according to their soil type and maximize the Agricultural decision with recommending appropriate fertilizer.

II. LITERATURE SURVEY

Agriculture sector plays a major role in Indian economy, as 70 percent households in India depends purely on this field. Agriculture in India contributes to about 17% of Gross Value Added as of 2015-16.But there is a continuous decline in agriculture's contribution to Gross Value Added. Food is essential for life and we depend on agricultural outputs, so farmers play a very important role. Supervised machine learning methods are used: Support Vector Machine (SVM) to show effectiveness in soil quality prediction. A smart wireless device for sensing soil moisture and meteorological data. The wireless device gives an error rate of 15% and 95% accuracy. However, it has not been tested for real time data. KNN Classifier which analyses soil and predicts crop yield and SVM can be used for more accuracy as results are not accurate.

III. EXISTING SYSTEM

- Agriculture plays a dominant role in a country like India
- Traditional system is followed to grow crops based on their ancestors were growing
- Agriculture intelligent system is an application program which provides answer according to authoritative experts in related field for those application problems
- Farmers used to asks authoritative experts they guide based on their experience and knowledge based results

Drawbacks of existing system

- Difficult to make agricultural knowledge base judgment.
- Knowledge acquisition is not done

IV. PROPOSED SYSTEM

Knowledge acquisition is an important part of agriculture system which gathers relevant professional knowledge and experience data from the agriculture experts Machine learning technology helps in comprising soil condition, weather condition of the past that provide accurate and precise decision that can be help to grow the crops and make profit of it The output of this work would produce more profit than earlier and least possible chances of losses.

V. METHODOLOGY

- Data Gathering

The data through external sources are gathered and stored into the application

- Data Pre-processing

In this Module, The data gathered is processed to identify the valid parameters and invalid parameters required for the segmentation.

- Data Segmentation

In this module, the data pre-processed data is used to segmentation based on the query.

- Data Classification

Using machine learning algorithm, the data is classified by considering the parameters Region, PH, and additional components.

- Data Comparison

Then data displayed based on comparison with other parameters.

- Prediction

In this module, the data for the farmers is predicted.

- Crop Details

Data displayed for the prediction model.

.K-nearest neighbours' algorithm: For classification and regression in pattern recognition we can use the k-n n algorithm as non-parametric based algorithm. 'k' closest training examples in the feature space can be used as inputs. Using this we can get output for both regression as well as classification.

K-NN classifies the objects in to classes. The object is mapped to the class most common among its k nearest neighbours (k is a positive integer, typically small). If k = 1, then the object is simply assigned to the class of that single nearest neighbour. In k-NN regression, the output is the property value for the object. This value is the average of the values of its k nearest neighbours.

Bootstrap aggregating, is a machine learning ensemble algorithm which helps other algorithms to improve the stability and accuracy. It also reduces deviations and helps to fine tune the curves. It is usually applied to decision tree methods, it can also be used with other methods.

In machine learning, support vector machines are supervised learning models with associated learning algorithms that analyse data used for classification and regression analysis. It takes the training data set to build an algorithm model that classifies the test set which includes the newer data , making it a non-probabilistic binary linear classifier (although methods such as Platt scaling exist to use SVM in a probabilistic classification setting). In SVM model examples are plotted as points in space, in such a way that the examples of the different categories are distinguished by a clear gap that is as wide as possible. And test set examples are also categorized and mapped in to same space with the appropriate classification.

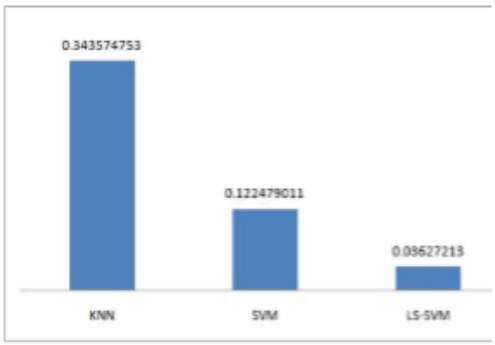

Fig classifier for agriculture estimation

VI. CONCLUSION

The technology of predicting agriculture system will help the farmers in decision making of which crop to cultivate.This system takes into consideration the past production of data which will help the farmers get into demand and profit. These technology are helpful for farmers to get profit and least possible chances of loss.

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