

ABSTRACT

Agriculture growth mainly depends on diverse soil parameters, namely Nitrogen, Phosphorus, Potassium, Crop rotation, Soil moisture, pH, surface temperature and weather aspects like temperature, rainfall, etc. Technology will prove to be beneficial to agriculture which will increase crop productivity resulting in better yields to the farmer. The proposed project provides a solution for Smart Agriculture by monitoring the agricultural field which can assist the farmers in increasing productivity to a great extent. This work presents a system, in a form of a website, which uses Machine Learning techniques in order to predict the most profitable crop in the current weather and soil conditions. This system can also help in predicting the yield of the crop using weather parameter, soil parameter and historic crop yield. Thus, the project develops a system by integrating data from various sources, data analytics, prediction analysis which can improve crop yield productivity and increase the profit margins of farmer helping them over a longer run.

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LIST OF ABBREVIATIONS

ABBREVIATIONS	EXPANSION
ML	Machine Learning
NB	Naive Bayes
KNN	Kth nearest neighbour

CHAPTER 1

INTRODUCTION

1.1 OVERVIEW

Crop yield prediction is one of the challenging tasks in agriculture. It plays an essential role in decision making at global, regional, and field levels. The prediction of crop yield is based on soil, meteorological, environmental, and crop parameters. Decision support models are broadly used to extract significant crop features for prediction. Precision agriculture focuses on monitoring (sensing technologies), management information systems, variable rate technologies, and responses to inter- and intravariability in cropping systems. The benefits of precision agriculture involve increasing crop yield and crop quality, while reducing the environmental impact.

Crop yield simulations help to understand the cumulative effects of water and nutrient deficiencies, pests, diseases, the impact of crop yield variability, and other field conditions over the growing season.

1.2 MACHINE LEARNING

Machine learning could be a subfield of computer science (AI). The goal of machine learning typically is to know the structure information of knowledge of information and match that data into models which will be understood and used by folks. Although machine learning could be a field inside technology, it differs from ancient process approaches.

In ancient computing, algorithms are sets of expressly programmed directions employed by computers to calculate or downside solve. Machine learning algorithms instead give computers to coach on knowledge inputs and use applied math analysis so as to output values that fall inside a particular vary. thanks to this, machine learning facilitates computers in building models from sample knowledge so as to modify decision-making processes supported knowledge inputs.

1.2 OBJECTIVE

The main objective this paper introduces a ML model that classify and predict crop yeild and predict crop by utilizing supervised ML algorithms. Thus, the proposed approach offers a solution to predict performance efficiently and accurately by comparing several ML model.

CHAPTER 2

LITERATURE SURVEY:

[1]Title: Crop Yield Prediction using Machine Learning Algorithm

D.Jayanarayana Reddy; M. Rudra Kumar

Agribusiness is the foundation of India's economy, with in excess of 50% of the populace occupied with cultivating. Environmental change,

environmental change and other ecological variables altogether affect farming wellbeing. Machine learning (ML) assumes a significant part as it is an apparatus for Crop Yield Prediction (CYP) independent direction.

[2]Title: Crop Yield Prediction in Precision Agriculture

Prof. Dr. Miklós Neményi

The prediction of crop yield is based on soil, meteorological, environmental, and crop parameters. Decision support models are broadly used to extract significant crop features for prediction. Precision agriculture focuses on monitoring (sensing technologies), management systems, variable rate technologies, and responses to inter- and intervisibility cropping systems.

[3]Title: Crop Recommender System Using Machine Learning Approach

Shilpa mangesh pande; prem kumar ramesh; anmol; b. R aishwarya; karuna rohilla

There is no question that farming and enterprises are connected to the jobs of country Indians. This is one of the principle justifications for why peripheral ranchers in India end it all

[4]Title: AgroConsultant: Intelligent Crop Recommendation System Using Machine Learning Algorithms

ZeelDoshi; Subhash Nadkarni; Rashi Agrawal

horticulture is a significant commitment to the Indian economy. The huge number of individuals living in India relies upon how they live in

horticulture. Numerous Indian ranchers accept that they can pick plants to plant at a given time.

[5]Title: A Review on Data Mining Techniques for Fertilizer Recommendation, 2018

Authors: Jignasha M. Jethva, Nikhil Gondaliya, Vinita Shah

At the point when the dirt is insufficient in supplements, add compost to decrease it. A typical issue in farming is excrement determination and fertilizer expansion. Extreme development or absence of manure can harm vegetation and diminish efficiency. This record sums up the different techniques for removing information used to develop a bunch of modern manure soils.

[6]Title: A Survey on Data Mining Techniques in Agriculture, 2015

Author: M.C.S.Geetha

Horticulture is important for the economies of emerging nations, particularly India. Mining assumes a significant part in decision-production in numerous spaces of farming. It inspects the job of data mining in the farming area and work corresponding to a couple of creators in the rural area. It likewise checks out various methods of acquiring data to resolve numerous agrarian issues. This paper integrates the work of several authors in a single place so it is valuable for specialists to get data of current situation of data mining systems and applications in context to farming field.

[7]Title: AgroNutri Android Application, 2016

Authors: S. Srija, R. Geetha Chanda, S.Lavanya, Dr. M. Kalpana Ph.D

This paper communicates the idea regarding the making of AgroNutri an android application that helps in conveying the harvest particular fertilizer amount to be applied. The future scope of the AgroNutri is that GPRS can be included so that according to location nutrients are suggested. Further this application would be incorporated as a piece of the accuracy agriculture wherein sensors can be utilized to discover the measure of NPK present in the dirt and that sum can be deducted from the suggestion and giving us the exact measure of supplements to be added.

[8]Title: Machine Learning: Applications in Indian Agriculture, 2016

Authors: Karandeep Kaur

Agribusiness was an area that was contrary with innovation and its turn of events. Indian ranchers should comply with the common principles. AI is the fundamental thought utilized in all data sources and results. He has utilized his capacity in basic science and programming. Mechanical preparing figures have incredibly worked on the craft of AI and incorporate sensor-based parts utilized in coordinated agribusiness. This paper analyses the different employments of AI in horticultural fields. It gives experiences into the issues looked by ranchers and how to settle them utilizing this technique.

Existing System

- Even now, Agriculture supports about 58% of total population, which is 75% at the time of independence i.e., a drop of 17%.
- A good amount of people in villages are leaving the agriculture and adopting other professions due to poor yields and returns.

In a recent study, about 76% of farmers want to give up farming as there is no market and amount of production

Proposed System

- Large amount of datasets are given containing information about types of crops, yield, soil types, seasons etc.
- Providing the user to select based on which field he/she wants to perform the analysis.
- Analyzing the data present with us based on the provided user requirement.
- Showing results with at most available possibilities which will enhance the chances of yield in the future.

Major Prerequisites:

- Datasets containing information about various types of crops.
- Data related to amount of yield produced by variety of crops.
- An efficient algorithm for analysis of yield.

Implementation:

We proposed as an alternative to the user-based neighborhood approach. We first consider the dimensions of the input and output of the neural network. In order to maximize the amount of training data we can feed to the network, we consider a training example to be a user profile (i.e. a

row from the user-item matrix R) with one rating withheld. The loss of the network on that training example must be computed with respect to the single withheld rating. The consequence of this is that each individual rating in the training set corresponds to a training example, rather than each user. As we are interested in what is essentially a regression, we choose to use root mean squared error (RMSE) with respect to known ratings as our loss function. Compared to the mean absolute error, root mean squared error more heavily penalizes predictions which are further off. We reason that this is good in the context of recommender system because predicting a high rating for an item the user did not enjoy significantly impacts the quality of the recommendations. On the other hand, smaller errors in prediction likely result in recommendations that are still useful—perhaps the regression is not exactly correct, but at least the highest predicted rating are likely to be relevant to the user.

Data Processing is a task of converting data from a given form to a much more usable and desired form i.e. making it more meaningful and informative. Using Machine Learning algorithms, mathematical modeling and statistical knowledge, this entire process can be automated. The output of this complete process can be in any desired form like graphs, videos, charts, tables, images and many more, depending on the task we are performing and the requirements of the machine. This might seem to be simple but when it comes to really big organizations like Twitter, Facebook, Administrative bodies like Paliament, UNESCO and health sector organizations, this entire process needs to be performed in a very structured manner.