Agro Expert Using Google API

Kale Adika Hiralal

Jaihind College of Engineering, Pune, India
kaleadika99@gmail.com

Pansare Sayali Ashok

Jaihind College of Engineering, Pune, India
pansare20.sayali@gmail.com

Wagh Monika Sunil

Jaihind College of Engineering, Pune, India
monikawagh3399@gmail.com

Said Shubhangi K.

Jaihind College of Engineering, Pune, India
Shubhangi28587@gmail.com

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Abstract— *Agriculture is the backbone of Indian economy. Mostly crops are loss due to the erroneous selection of the crop, climate change. The farmers are generally not aware of the requirements of the crops. i.e. The minerals, soil moisture & other soil requirements one more problem that a farmer generally encounters is the pest & diseases that can affect the crops they grow which they are generally unaware of in an early stage. This are the problems of farmer is addressed in our paper and we have tried to solve it with the help of Agro Expert using Google API system by the help of our model. We predict the suitable crop to the farmers and also detect the pest and may affect as suggest the pest control technique. In this paper we have applied collaborative filtering algorithm, aprori algorithm, linear regration prediction technique.*

Keywords- *Indian Agriculture, Crop Selection Method, Machine Learning Techniques*

I. INTRODUCTION

About 58.4% of the Indian population relies on agriculture as its primary source of livelihood. Further, it also caters to the food, fodder and fuel needs of the population and contributes to approximately sixteen percent of the total GDP and ten percent of the total exports. But in the last decade, the field of agriculture has suffered huge economic losses. One of the major reasons behind this is the climate change taking place due to the rising global temperature. In addition to this one of the greatest problems farmers face today is the crop failure due to unsuitable weather conditions. Indian farmers are accustomed to grow their traditional crops only which many a times due to unfavorable weather conditions results in disappointment in terms of low or no yield. As a result, the rate of farmers' suicide in various region of India is also going up. Therefore, there is an urgent need of providing an easy and hassle free mechanism to farmers to decide which crops are the best suitable in their region according to the current weather conditions. Information and Communication Technology (ICT) has led the way in opening new ways for disseminating the information to the masses at a very low cost. In this app, the farmer has to select soil type and cropping season, and then accordingly the suitable crops are suggested. Unfortunately, this data is static in

nature and doesn't consider the effect of real time weather conditions. It requires farmer to have prior knowledge of soil type and cropping season about which most of the farmers may not be aware of. This may lead to discourage them from using such kind of solutions. Further, there are more apps developed like in which the farmer posts queries through the app and the experts answer them. But, this can be a very time consuming process because of non-availability of the experts. There are other apps like RML Farmer and Kisan Suvidha in Punjab that provides basic information on crop prices, weather updates, and expert advice, but these apps just provide raw information to the farmers which need to be processed by farmers to take a suitable decision.

II. RELATED WORK

In this paper, this problem is solved by proposing a recommendation system through an assemble model with majority voting technique using random tree CHAID, K-Nearest Neighbor and Naïve Bayes as learners to recommend a crop for the site specific parameters with high accuracy and efficiency.[1]

In this paper ,we attempt to forecast yield of rice with astute analysis food is the most important aspect of life, for, without it, humankind can't survive hence storing food becomes an absolute compulsion for countries all over the world, developing once. The critical aspect the government for the long term, particularly at a time of nature disaster .Bangladesh is a low-lying region, hence the estimation of food is demanding. [2]

In this paper focuses on predicting the yield of the crop by applying various machine learning techniques. The outcome of this technique is compared on the basis of mean of absolute error. The prediction made by machine learning algorithms will help the farmer to decide which crop to grow to get the maximum yield by considering factors like temperature, rainfall, area etc.[3]

In this paper, predicts the yield of almost all kinds of crops that are planted in India. This script makes noval by the usage of simple parameters like state ,district ,season, area and the user can predict the yield of the crop in which year he or she wants to the paper uses advanced regration techniques like Kernel Ridge, Lasso and ENet algorithms to predict the yield and uses the concept of Stacking Regression for enhancing the algorithms to give a better prediction.[4]

In this paper, selection of crops will depends upon the different parameters such as market price production rate and the different government policies. Many changes are required in the agriculture field to improve changes in our Indian economy. We can improve agriculture by using machine learning techniques which are applied easily on farming sector. Along with all advances in the machines and technologies used in farming, useful and accurate information about different matters also plays a significant role in it. The concept of this paper is to implement the crop selection method so that this method helps in solving many agriculture and farmers problems. This improves our Indian economy by maximizing the yield of crop productions.[5]

III. EXISTING SYSTEM

There is no computerized approach to help the farmers to sell their products, see the pesticide for Crops. Presently, the farmer moves to nearest market place or fertilizer store, to hand over his/her product to some particular agent or for fertilizers, the agent requests the farmer to visit market after some specific time to collect the money earned out of the product sold. That agent sells the same product to some other agent or dealer at an excessive cost. By this every agent tries to cuts his/her commission out of that. The farmer cannot be aware of transaction and the amount at which their product was sold. There is no facility present for the farmers to know the market rates at different markets where they can sell their products for achieving earnings of higher profits. Farmers are unaware of the compensations and schemes provided by government. Regardless of all the changes knocking the doors the farmers find it hard to cut benefit out of those. So he/she doesn't get maximum profit in the current system.

IV. PROPOSED SYSTEM

In this system we recommend crops according to different parameters we are going to predict the disease by selecting their symptoms as per the disease, we predict the pesticides. To grow more in less land two important sustainability factors for the crop are necessary; one is the fertilizer and pest control. Due to environmental impact pest control mechanism becomes the highest priority for the famers. Many pesticide/insecticide companies introduce new pesticides frequently. To make use of this facility and efficaciously produce greater profits farmer needs the knowledge of the pesticide. In this app we have present an overview of the design and development of various recommendation models for the ease of crop production to the farmers

There are total three modules in our project Crop Recommendation, Pesticide recommendation and Market Recommendation. In our first module we take a place wise and season wise crop dataset. Using collaborative filtering we suggest the crop to user. In second module we take a disease and crop name and using apriori algorithm we predict the disease name, finally we recommend the pesticide of selected disease. In third module we recommend the market to the farmer for crop selling using linear regression prediction technique.

V. MATH MODEL

Where,

Q = User entered symptoms
 CB = Check Disease
 C = Predict Disease
 PR = Recommend Pesticides
 UB = Recommend market

B] Set Theory

Let S be as system which _nd entered symptoms

$S = fIn, P, Op, g$
 Identify Input In as
 $In = fQg$

Where,

Q = User entered symptoms
 Identify Process P as
 $_P = fCB, C, PRg$

Where,

$_CB$ = System check disease is present or not
 C = Detect disease
 PR = Preprocess request
 Identify Output Op as
 $Op = fUBg$

Where,

$_UB$ = Update Result

After preprocessing the request, system detect disease and recommend pesticides also recommends crop market for selling crop.

_ = FailuresandSuccessconditions:

Objects involved

1.1 Farmer

1.2. Vendor

1.3 Pesticides

_ Functional relations

Linear Regression

Machine Learning

Dataset

_ Mathematical formulation if possible Not Possible

_ Success Condition:

Successfully algorithm implementation and proper input.

_ Failure Condition:

1. Huge data can lead to more time consumption to get the information.

2. Hardware failure.

3. Software failure.

_ Space Complexity:

The space complexity depends on Presentation and visualization of discovered patterns.

More the storage of data more is the space complexity.

_ Time Complexity:

Check No. of patterns available in the database= n . If ($n > 1$) then retrieving of information can be time consuming. So the time complexity of this algorithm is $O(n^n)$

_ Above mathematical model is NP-Hard

Because sometime result is not accurate.

VI. CONCLUSION

Agriculture is the field which helps in economic growth of our country. But this is lacking behind in using new technologies of machine learning. Hence our farmers should know all the new technologies of machine learning and other new techniques. This techniques helps in getting maximum yield of crops. Many techniques of machine learning are applied on agriculture to improve yield rate of crop. These techniques also help in solving problem of agriculture. We can also get the accuracy of yield by checking for different methods. Hence we can improve the performance by checking the accuracy between different crops. Sensor technologies are implemented in many farming sectors. This paper helps in selecting proper crop for their selected land and selected season. These techniques will solve the problems of farmers in agriculture field. This will help in improving the economic growth of our country.

REFERENCES

- [1]. S.Pudumalar, E.Ramanujam,” Crop Recommendation System for Precision Agriculture [2016].
- [2]. Umid Kumar Dey , Abdullah Hasan Masud ,Mohammed Nazim Uddin, “ Rice Yield Prediction Model Using Data Mining [2017]
- [3]. Ramesh Medar, Vijay S. Rajpurohit , Shweta, Crop Yield Prediction using Machine Learning Techniques.[2019]
- [4]. B. Jabber, Potnuru Sai Nishant, Crop Yield Prediction based on Indian Agriculture using Machine Learning.[2020]
- [5]. Aruvansh Nigam, Saksham Garg, Archit Agrawal, Parul Agrawal, Crop Yield Prediction Using Machine Learning Algorithms.[2019]