INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.165

Agricultural Crop Exhortation System

Syed   Farzana[1], G. Bhargavi[2], T. Sushma[3], G. Lalitha Devi[4], Ch. Hema Varshini[5]

Associate Professor, Department of CSE, KKR & KSR Institute of Technology and Sciences, A.P, India. [1]

B.Tech Student, Department of CSE, KKR & KSR Institute of Technology and Sciences, A.P, India. [2]

B.Tech Student, Department of CSE, KKR & KSR Institute of Technology and Sciences, A.P, India. [3]

B.Tech Student, Department of CSE, KKR & KSR Institute of Technology and Sciences, A.P, India. [4]

B.Tech Student, Department of CSE, KKR & KSR Institute of Technology and Sciences, A.P, India. [5]

ABSTRACT: India is a agricultural Land but it is facing lots of problem in selecting a crop due to lack of knowledge like incorrect planning, less knowledge towards environment, listening to others, following the thoughts of ancestors and so on are the problems facing by farmers in selecting a crop. The farmers are always cultivating the same type of crop in their farms which is leading to decrease the fertility of land. Decrease in fertility shows effect on yield which leads to the greatest loss to the farmers. The farmers must have the knowledge on some parameters like climatic conditions, soil type, ground water percentage, and season. So to give an idea to farmer, we came up with a solution to suggest the farmers regarding which crop they need to cultivate during that particular season. We also suggest the crop based on its yield and demand of the crop in the market in that particular area or state. Here, in our proposed work we have brought up the machine learning techniques for recommending a crop to the farmers.

KEYWORDS: Agriculture, crop, season productivity, farmer.

I. INTRODUCTION

India is one among the most seasoned nations which is as yet rehearsing farming. However, as of late the patterns in farming has definitely advanced because of globalization. Different elements have affected the soundness of the agribusiness in India. Many new technologies have been evolved to regain the health.

Agriculture makes a dramatic effect in the economy of a country. Due to the change of natural factors, Agriculture farming is degrading now-a-days. Agriculture directly depends on the environmental factors such as sunlight, humidity, soil type, rainfall, Maximum and Minimum Temperature, climate, fertilizers, pesticides etc. Knowledge of proper harvesting o f crops is in need to bloom in Agriculture.

India has seasons of
1. Winter which occurs from December to March
2. Summer season from April to June
3. Monsoon or rainy season lasting from July to Sep and
4. Post-monsoon or autumn season occurring from October to November.

Due to the variety of season and rainfall, evaluation of suitable crops to cultivate is important. Farmers face major problems such as crop management, expected crop yield and productive yield from the crops. Farmers or cultivators need proper colleague regarding crop cultivation as now-a-days many fresh youngsters are interested in agriculture.

II. LITERATURE REVIEW

[1] Data mining is the practice of inspecting and deriving functional records from the facts. Data mining unearths its utility in various fields like finance, retail, medicine, agriculture etc. Data mining in agriculture is used for reading the numerous biotic and abiotic factors. [2] A massive fraction of the population of India considers agriculture as its number one profession. The manufacturing of crops plays an essential function in our USA Bad pleasant crop manufacturing is frequently because of either immoderate use of fertilizer or the use of not sufficient fertilizer. The proposed machine of IoT and ML is enabled for soil testing the use of the sensors, is based totally on measuring and staring at soil parameters. This gadget lowers the chance of soil degradation and facilitates keep crop fitness. Different sensors inclusive of soil temperature, soil moisture, pH, NPK, are used on this system for tracking temperature, humidity, soil moisture, and soil pH along with NPK nutrients of the soil respectively.

[3] This paper presents a way to aid farmers specializing in profitable vegetable cultivation in Sri Lanka. As agriculture creates an financial future for developing international locations, the demand of present day technology in this quarter is higher. Key technology used for this hassle is Deep Learning, Machine Learning and Visualization. As the product, android cellular software is evolved. In this software the customers have to input their area to begin the prediction system. Data pre-processing is commenced whilst the vicinity is obtained to the gadget. The accumulated dataset divided into 3 elements. 80 percent for schooling, 10 percentages for testing and 10 percentage for validation. After that the version is created the use of LSTM RNN for vegetable prediction and ARIMA for fee prediction. Finally, for given place profitable crop and predicted destiny price of greens are shown inside the software. [4] Machine mastering is a rising studies discipline in crop yield analysis. Yield prediction is a totally essential difficulty in agriculture. Any farmer is inquisitive about understanding how much yield he is about to count on. In the beyond, yield prediction was completed with the aid of thinking about farmer's experience on precise field and crop. The yield prediction is a chief problem that stays to be solved primarily based on available information. Machine gaining knowledge of techniques are the better desire for this reason. Different Machine learning techniques are used and evaluated in agriculture for estimating the future year's crop production. This paper proposes and implements a system to predict crop yield from preceding statistics. This is achieved by using making use of device mastering algorithms like Support Vector Machine and Random Forest on agriculture facts and recommends fertilizer appropriate for each particular crop. The paper makes a speciality of creation of a prediction version which can be used for destiny prediction of crop yield. It affords a short analysis of crop yield prediction the usage of machine getting to know

[5] Smart farming system is an independent & state-of-the-art mechanism, with the intention to aid within the boom of agriculture yield with the aid of making use of hi-tech agriculture techniques without human intervention. The paper represents an overview of a current clever farming software answers. The proposed machine works on the statistics mining techniques & records acquired from satellite tv for pc records, Internet, from soil trying out record fed inside the current databases. It elegantly uses the clustering algorithms for taking decisions primarily based on the attention of climate changes, via maintaining song of crop growing levels, with right water utilization, in conjunction with the choice of fertilizer to be used in line with crop degree, in addition to the pesticide to be used to protect crops from sicknesses and insect assault. This gadget is capable of increasing the productivity of fields by dealing with farm operations smartly. [6] An agricultural area necessitate for nicely described and systematic approach for predicting the vegetation with its yield and helping farmers to take accurate decisions to beautify nice of farming. The complexity of predicting the nice crops is high duet unavailability of crop knowledge-base. Crop prediction is an efficient technique for higher fine farming and increase revenue. Use of statistics clustering algorithm is an effective approach in area of information mining to extract beneficial statistics and deliver prediction. Various techniques were implemented up to now are laboured both for crop prediction. Crop prediction model helping farmers to take correct selection. These certainly help in enhancing satisfactory of farming and generate better revenue for farmers. Traditional clustering algorithms consisting of okay-Means, improve drough k-Means and-method++ makes the tasks complex because of random choice of preliminary cluster centre and decision of quantity of clusters. Modified K-Means set of rules is there with the aid of used to enhance the accuracy of a device because it achieves the high first-class clusters duet preliminary cluster centric choice.

[7] Data pushed precision agriculture aspects, specially the pest/disease control, require a dynamic crop-climate statistics. An experiment changed into carried out in a semi-arid area to recognize the crop-climate-pest/ailment family members the usage of wireless sensory and subject-level surveillance records on closely associated and interdependent pest (Thrips) - ailment (Bud Necrosis) dynamics of groundnut crop. Data mining strategies have been used to show the data into useful facts/expertise/relations/tendencies and correlation of crop-weather-pest/disorder continuum. These dynamics received from the statistics mining strategies and trained via mathematical fashions were established with corresponding surveillance information. Results acquired from 2009 & 2010 kharif seasons (monsoon) and 2009-10 & 2010-11 rabi seasons (publish monsoon) information could be used to broaden a actual to close to real-time decision guide machine for pest/disease predictions. [8] Agriculture is the most basic feature to accomplish meals call for everywhere in the globe; it's miles a spine specifically inside the developing nations like India. The application of Data mining strategies in agriculture mainly on soils can revise the situation of pledge making and enhance cultivation yields in a better way. The evaluation of soils performs a crucial function for resolution making on numerous problems associated with agriculture field. This paper provides about the role of records mining in perspective of soil evaluation inside the subject of agriculture and also confers approximately numerous records mining strategies and their associated paintings through several authors in context to soil evaluation area. The records mining strategies are of very up to the moment within the region of soil analysis.

[9] Soil is a crucial key component of agriculture. The goal of the work is to are expecting soil kind using information mining category techniques. Methods/Analysis: Soil kind is predicted the use of data mining classification techniques together with JRip, J48 and Naive Bayes. These classifier algorithms are applied to extract the expertise from soil facts and two sorts of soil are taken into consideration inclusive of Red and Black. Findings: In this paper, Data Mining and agricultural Data Mining are summarized. The JRip model can produce greater reliable effects of these facts and the Kappa Statistics in the forecast were expanded. Application/Improvement: For solving the problems in Big Data, green techniques can be created that utilize Data Mining to beautify the exactness of classification of big soil records units.

III. EXISTING SYSTEM

In the existing system the traditional soil testing involves taking samples around and sending to labs for testing and based on lab's result, they apply a uniform mixture of nutrients or fertilizer to the entire field. Generally, these lab makes fertilizer and lime recommendation. Hence later on applying fertilizers to fields, we are resulting in damage to crop yield and also possibly to the environment. Based on the soil parameters they used to predict the crop. In the existing system they have predicted crops for one particular state not for all the states in India. Existing systems used several data mining techniques to predict the crop.

The disadvantages of existing system:
- ❖ In the existing system, they considered only about a particular State and not about all the states and other parameters.
- ❖ Relatively slower to build.
- ❖ Hard to interpret.
- ❖ Computationally expensive.

IV. PROPOSED SYSTEM

In the proposed system, Crop production depends on many factors like soil, climatic conditions etc. Proposed work is based on the production of crops in previous years, crops can be recommended to the farmers based on several environmental problems like Temperature, Rainfall, Ground water level, Season, Soil type.

This kind of suggestions will help the farmer to know that whether the suggested crops have better production in previous years. The production of crops are affected by several parameters like less water, disease etc. We recommend the crop which has high demand in the market. Temperature, Rainfall, Water level, Soil type, Season, State is taken into consideration for predicting the high demand crops for the farmers to get high productivity. Based on this farmer can take decision of trend on crops that are to be harvested. Farmers will be given recommendation by considering the season of crop production. Our proposed work will help the farmers to get high production of the crop cultivated.

The problem statement of the project is to recommend crops to the farmers using Decision Tree Classifier. The basic process of this project is that we will preprocess the data provided to us, then it is used to prepare the model for the backed and using flask to connect it to the UI interface to show the full and final output.
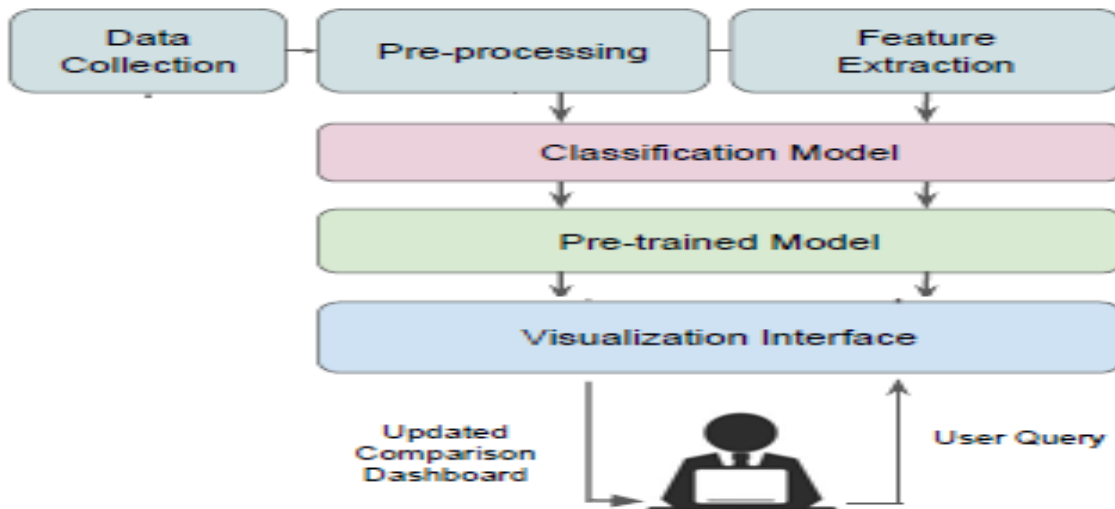
Fig: Proposed system architecture

Advantages of proposed system:
- ❖ In our proposed system, we have used a large dataset considering all the states of India, whereas in the existing system only a particular state was taken into the consideration.
- ❖ These recommendations can be extracted for educating the famers. Pictorial representation shows the farmer a deeper knowledge about the crops to choose for cultivation.
- ❖ Does not require normalization or Scaling
- ❖ Easily built
- ❖ Easy to interpret
- ❖ Computationally less expensive
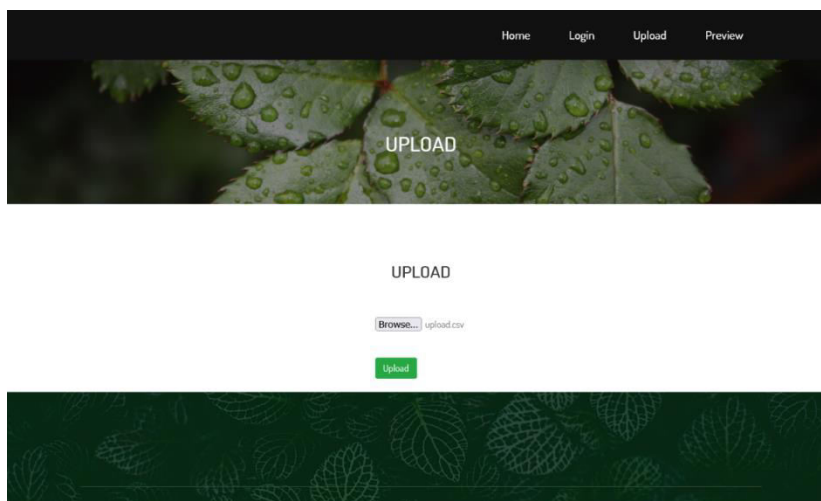
V. SCREENSHOTS

Fig 1: The data that is gathered (the dataset) from the various resources which contains the data related to agricultural crop is made into a dataset and it is uploaded

PREVIEW

States	Rainfall	Ground Water	Temperature	Soil type	Season	Crops	Fertilisers required	Cost of cultivation	Expected revenues	Quantity of seeds per hectare
Andhra Pradesh	110.75	9.74	31.5	Clayey	Kharif	Paddy IGKVR-2 (IET 19795)	Potassium,Urea	22810	63851.8391	25kg
Andhra Pradesh	110.75	9.74	31.5	Alluvial	Kharif	Paddy IGKVR-2 (IET 19795)	Potassium,Urea	22810	63851.8391	25kg
Manipur	148.80	4.00	30.5	Black	Kharif	Bajra	Nitrogen,Phosphorus,Potash	8000	70414.47817	4.5kg
Odisha	215.00	5.00	30.0	Latterite	Kharif	Bajra	Nitrogen,Phosphorus,Potash	8000	70414.47817	4.5kg
Odisha	215.00	5.00	30.5	Black	Kharif	Bajra	Nitrogen,Phosphorus,Potash	8000	70414.47817	4.5kg
Punjab	60.00	8.90	30.0	Latterite	Kharif	Bajra	Nitrogen,Phosphorus,Potash	8000	70414.47817	4.5kg
Punjab	60.00	8.90	30.5	Black	Kharif	Bajra	Nitrogen,Phosphorus,Potash	8000	70414.47817	4.5kg

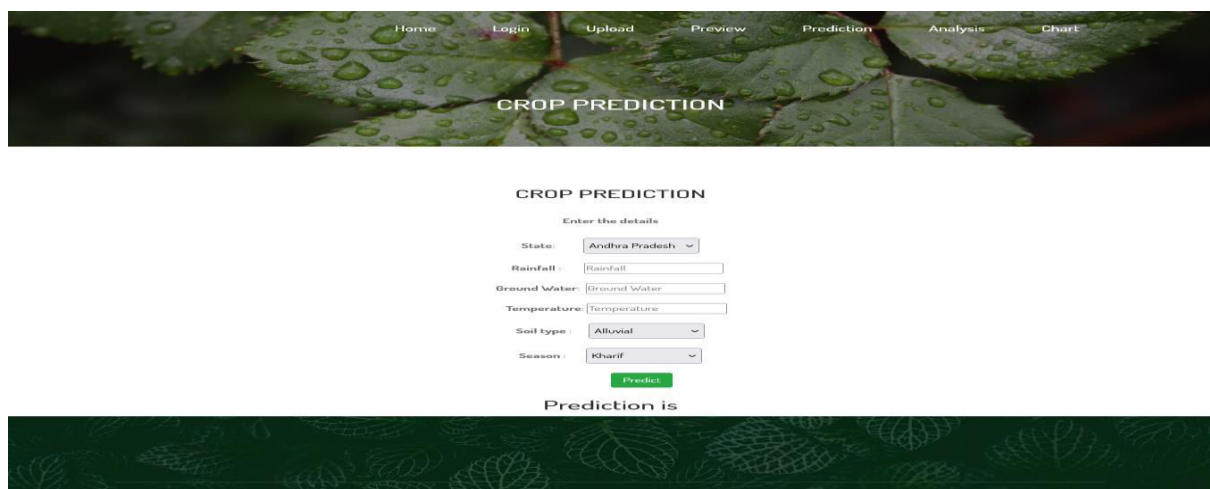Fig 2: The uploaded dataset will be displayed.

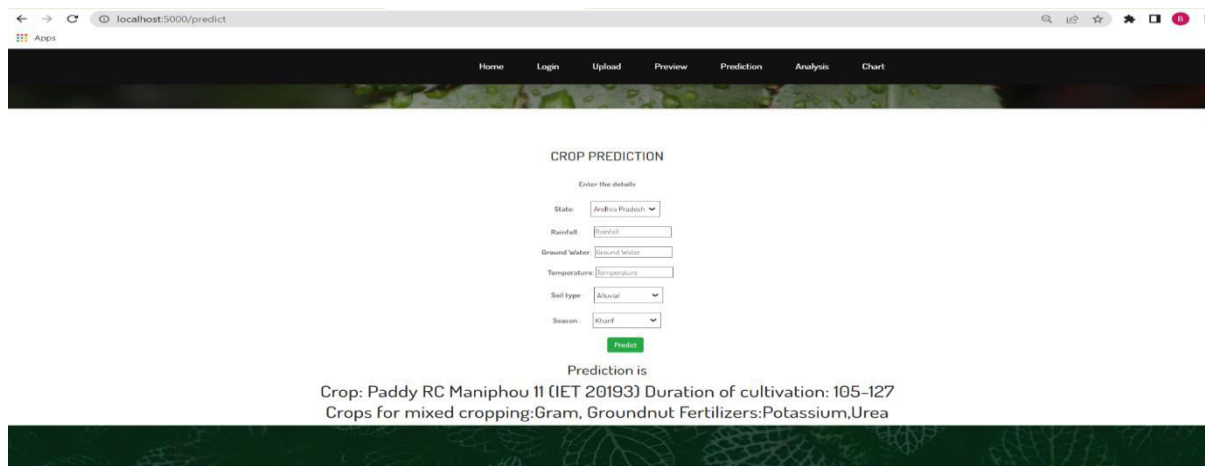Fig 3: In crop prediction page, the officer or the admin of the website enters the various parameters.

Fig 4: Based on given parameters the crop, duration of cultivation, mixed crops, fertilizers are suggested.
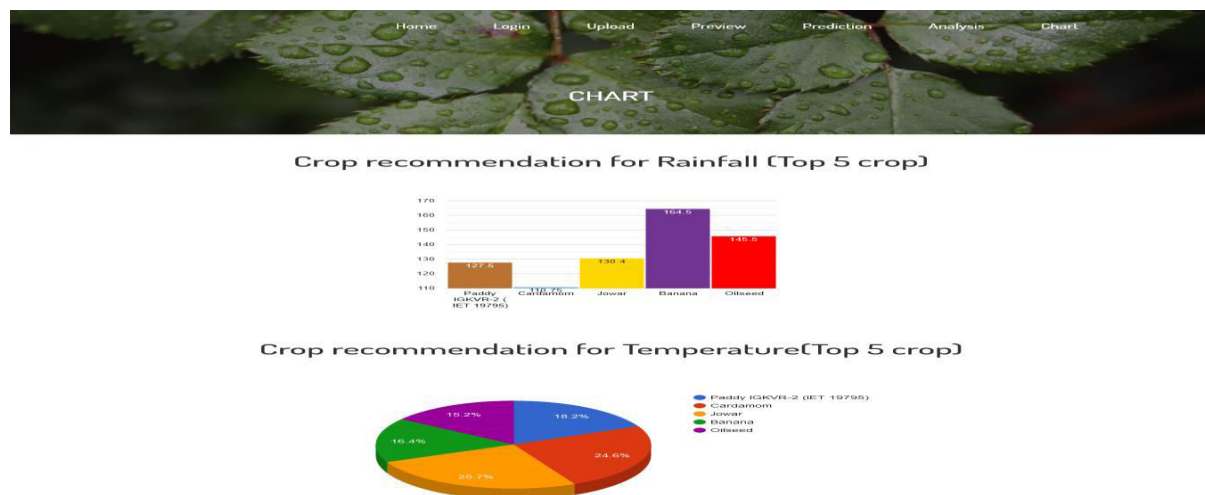

Fig 5: It shows the accuracy/performance of the system in the graph heavy rainfall and temperature.

VI. CONCLUSION & FUTURE WORK

In this paper, the proposed work is to recommend crop to the farmers that have high productivity and demand by considering several factors like state, temperature, rainfall, ground water level, season and soil type. Farmers need help with ongoing innovation to develop their harvests. Proper suggestion of crops can be informed by the agriculturists in time basis to the farmers. Many Machine Learning strategies have been utilized to break down the agribusiness boundaries. These techniques are used for recommendation of crops to the farmers. By following the suggested crop, it will help the farmers to get high yield of crop which would lead to profits. Since we have added different states, we include all districts in that state. Along with adding of soil parameters to our proposed work. This will be greatly helpful for the farmer to choose the right crop at right time which leads to higher production.

REFERENCES

[1] S.Pudumalar, E.Ramanujam, "Crop Recommendation System for Precision Agriculture", 2016 IEEE Eighth International Conference on Advanced Computing.

[2] Dhruvi Gosai, Chintal Raval, Rikin Nayak, "Crop Recommendation System using Machine Learning" International Journal of Scientific Research in Computer Science, Engineering and Information Technology, ISSN : 2456-3307, doi : https://doi.org/10.32628/CSEIT2173129, May-June - 2021.

[3] Thayakaran Selvanayagam, Suganya S, "Agro-Genius: Crop Prediction using Machine Learning" International Journal of Innovative Science and Research Technology, Volume 4, Issue 10, October – 2019.

[4] Devdatta A Bondre, S. Mahagaonkar, " PREDICTION OF CROP YIELD AND FERTILIZER RECOMMENDATION USING MACHINE LEARNING ALGORITHMS" International Journal of Engineering Applied Sciences and Technology, DOI:10.33564/ijeast.2019.v04i05.055.

[5] Priyanka P.Chandak Dr. A. J. Agrawal, "Smart Farming System Using Data Mining" International Journal of Applied Engineering Research ISSN 0973-4562 Volume 12, Number 11 (2017).

[6] Mayank Champaneri, Darpan Chachpara, " Crop Yield Prediction Using Machine Learning" International Journal of Science and Research, Volume 9 Issue 4, April 2020.

[7] Adinarayana Jagarlapudi, " Data Mining and Wireless Sensor Network for Agriculture Pest/Disease Predictions" 978-1-4673-0126-8/11/$26.00c 2019 IEEE.

[8] Ramesh Babu Palepu, Rajesh Reddy Muley, "An Analysis of Agricultural Soils by using Data Mining Techniques" Corpus ID: 212444709, 2017.

[9] Dr. P K Arunesh Arunesh, " Analysing Soil Data using Data Mining Classification Techniques" Indian Journal of Science and Technology, Vol 9(19), DOI: 10.17485/ijst/2016/v9i19/93873, May 2016.

Impact Factor: 8.165

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

📱 9940 572 462   🟢 6381 907 438   ✉ ijircce@gmail.com

Scan to save the contact details