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Survey on Crop Recommendation Based on Productivity and Season

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Abstract: ***The state should make investments in cutting-edge technologies like precision agriculture, which employs sensors to track crop health and soil conditions, to address this problem. When choosing the best time to sow, water, and harvest their crops, farmers can use this technology to their advantage. The state should also think about funding research and development to produce new crop kinds that are more resistant to environmental conditions like climate change. Agricultural characteristics and determinants offer important insights into the situation of agriculture right now. Decisions about crop yields, soil fertility, water consumption, and other crucial agricultural issues can be informed by these data. Moreover, technological advancements have made it possible to create new tools and technologies that might assist farmers in making more informed decisions on their operations. Farmers can benefit from modern technology in numerous ways, including increased agricultural yields, lower expenses, and more efficiency. Furthermore, access to more effective marketing and distribution channels is another way that technology may assist farmers in boosting their income. The best crops for a given climate and area can be found using data analytic. To do this, historical data on agricultural yields, weather patterns, soil conditions, and other elements that may have an impact on crop development can be examined. Farmers may choose the crops to grow and the best methods for managing them to increase yields by using data analytic.***

Keywords: Crop recommendation, Machine learning, Crop, Soil, Sensors.

I. INTRODUCTION

India is often referred to as an agricultural country. In essence, this shows that agriculture is a crucial part of our means of subsistence. Agriculture, which is also India's largest industry, is the foundation of the nation's economy. More over two thirds of the population are either directly or indirectly dependent on agriculture. India's farmers, who provide the majority of the nation's food, struggle to choose the appropriate crops for production because of the country's varied seasons and rainfall. Also, there are a variety of soil types, making it difficult to identify or forecast which crop will thrive in a given environment. According to such a strategy, the Crop Dataset has been assessed, and crop recommendations are based on productivity and season. Depending on their climatic qualities, crops are suggested. For recommendations, The IOT-based components will gather data from signals like temperature, soil moisture, etc. as well as data from datasets that comprise elements like nitrogen, potassium, phosphorus, and degree of precipitation, among others. To grow more crops with the soil that is already available, farmers must become more productive. One of the most crucial elements of precision agriculture is crop suggestion. Provide an application for users to utilise for crop suggestion so they can sign up, log in using their credentials, and give a gateway for farmers at first.

II. LITERATURE SURVEY

1) Review of Machine Learning Techniques for Crop Recommendation System.

Prof. Meena Ugale , Nimeesha Venkatavelu , Pranay Patil , Suraj Rane.

Agriculture production has a big influence on employment in India. As the soil in India has been cultivated for millennia, there has been nutrient and mineral depletion as well as soil weariness, which affects agricultural output. Furthermore, there is a demand for precision agriculture due to the dearth of modern applications. Precision agriculture, also known as satellite farming, employs a variety of methods and tools to manage farms based on the observation, evaluation, and response to crop variability both within and between fields. One of the main applications of precision agriculture is the recommendation of certain crops.

It assists in increasing agricultural productivity and producing income. The efficiency of various strategies on crop recommendation systems is examined and evaluated in this study.

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2) Agricultural Crop Recommendation System Based on Productivity and Season.

Tadi Hemalatha | B.N.Srinivasa Gupta.

A wide range of factors affect how crops are produced.With more people and land, production should increase, butthis is not possible. Farmers continue to practise archaic farming methods from past eras. Farmers used to rely on word-of-mouth, but today's climate makes it impossible forthem to do so. The measurements and conditions related toagriculture are what provide the data that is utilised to get insights into the Agra-facts. In order to give farmers reliable agricultural information, the IT sector's growth has resulted in several improvements in agricultural sciences. Ability to use modern technological approaches in agriculture is desirable in the present environment. Using the information, a clear model is built using machine learningtechniques, which allows us to forecast the future. Farmersare successful .

3) Agricultural Crop Recommendations Based OnProductivity And Season.

Praveen Kumar. D1, Muthuvel. R2, Ramprabhu. K3,
Neerkathalingam. V4, Dr.N. Uma Maheswari5.

Farmers used to hire by word-of-mouth, but because ofthe climate, they are unable to do so. The usage of agricultural components and factors results in data that may be utilised to further examine agri-information. Certain agricultural achievements are promoted with the assistance of the expansion of the IT industry. sciences to provide accurate agriculture data for farmers. In this circumstance, it is excellent intelligence to use cutting-edge technical tactics to the field of agriculture. Using the knowledge, machine learning techniques create a well-described modelthat makes it easier for us to get predictions. Crop rotation, crop forecast, water and fertiliser needs, and safety issues in agriculture may all be resolved. Owing to the environment's changing climatic conditions, a sustainable approach to encouraging agricultural development and assisting farmersin Their production and management are required.

4) Crop Yield Prediction and Crop Variety Recommendation Using Machine Learning in an AndroidApplication.

Ayushi Chauhan1, Jyoti Gupta2, Aastha Agarwal3, Richa Saxena4,Abhijeet Singh Ranghuvanshi5.

A prevalent problem among Indian farmers is that they frequently pick the wrong crop for their soil's requirements. Productivity is impacted as a result.

This method is distinguished by a soil database gathered from the farm, a crop offered by agricultural experts, and the attainment ofparameters together with soil through a dataset from a soiltesting facility. The information from the soil testing lab will be used by the advice device to do ensemble versions with majority voting methods using Random Forest Repressor and Artificial Neural Network as learners to predict crop yields and recommend a crop for each site- specific parameter with high accuracy and performance.

The final outcome of the challenge that creates a system theultimate earning margins of the cease consumer are increased by integrating data from many sources, prediction analysis that can also increase crop production productivity, statistics analytics, and helping them throughout their lifespan..

5) Crop Recommendation System for Using MachineLearning to Increase Crop Productivity

Ankit Pawar1, Mitalee Pendke2 , Pooja Shinde3, Suresh Rathod4, Avinash Devare5, Rohit Kumar Rajak6.

This hassle of the farmers has been solved through precision agriculture. This method is characterized by means of a soil database accumulated from the farm, crop supplied by using agricultural experts, achievement ofparameters which include soil via soil trying out lab dataset.

The facts from soil trying out lab given to recommendation system it'll use the accumulate information and do ensemble model with majority balloting approach using help vector device (SVM) and ANN as learners to recommend a crop for website precise parameter with excessive accuracy andperformance.

III. PROPOSED WORK

The primary purpose of the proposed effort is to use a mobileapplication to recommend crops to farmers based on the season of crop production. With the use of this technique, farmers may decide on the type of crop to cultivate in their fields based on the soil's availability.

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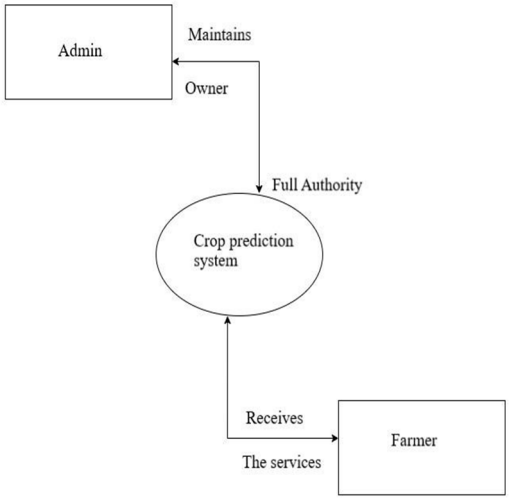


Figure 1: System Architecture

IV. MODULES AND THEIR FUNCTIONALITIES

A. Login Module

In the login page, a user can access an application by entering their username and password or by authenticating via a social network login. To develop an Android application, utilize Android Studio and a package. Launch the program, select an Android device that is active, install the application there, and check the outcomes.

B. Sign up Module

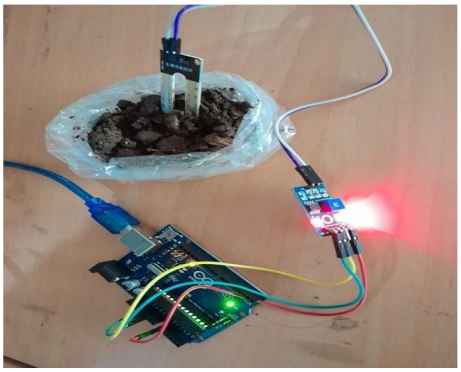
Users may register for events using the Signup module, which also provides for the management of event registrations. This is helpful for uniting community members and informing them on the progress of an event. It also assists event organizers by limiting participation to certain roles and closing events to general attendance.

C. Sensor

The implementation phase entails a number of steps, such as gathering IOT data, designing an ANN model, building the model's architecture, training the model on the preprocessed data, testing the trained model, minimizing error rates through learning rates, selecting the best activation functions, and enhancing accuracy through gradient descent and backpropagation.

D. IOT for Data Collection

Collecting data from the respective field region is part of the IOT implementation phase. The parameters of moisture, temperature, humidity, and pH are tracked in a specific field area. The observed parameters are subsequently saved and sent to the GUI as input. The figure below depicts the data collected from IOT in the field area.


Figure 2 :IOT Connections

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Measurement of the water content in the soil is the function of an Arduino soil moisture sensor. The DHT22 humidity sensor gauges the humidity and temperature of the air aroundit. These sensors are controlled by an Arduino microcontroller, which is also used to gather data from the sensors. The cloudplatform is used to gather the detected data. the information gathered via IoT sensors

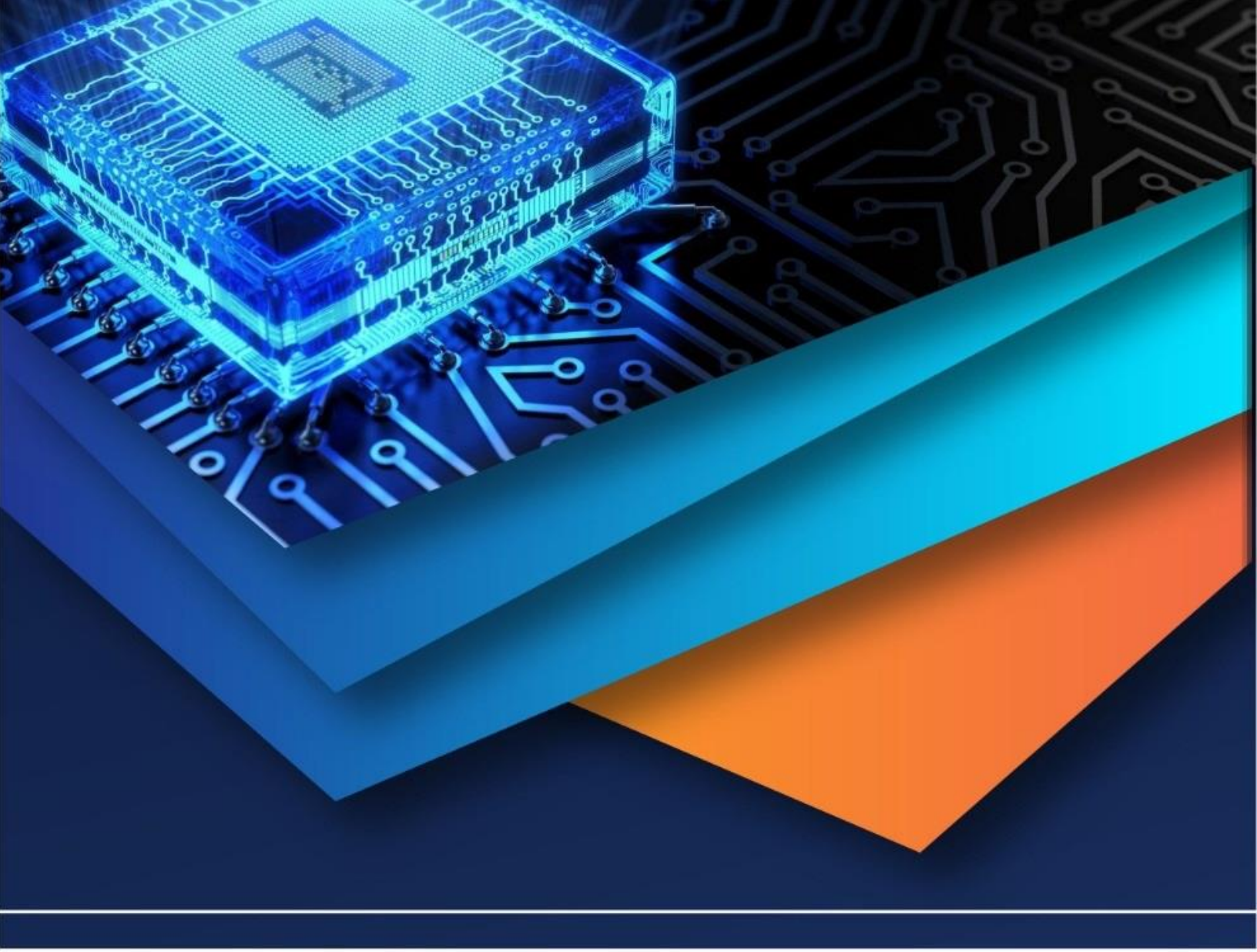
V. CONCLUSION

We successfully developed and implemented an agricultural crop recommendation system that farmers may use to boost agricultural productivity. With the use of this technology, farmers would be better equipped to choose the right crop to produce based on factors such astemperature, humidity, PH value, and rainfall. This allowsthe farmers to cultivate the right crop.

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