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AGRICULTURAL CROP RECOMMENDATIONS BASED ON PRODUCTIVITY AND SEASON

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ABSTRACT

Agriculture is a growing field of research. In particular, crop prediction in agriculture is critical and is chiefly contingent upon soil and environment conditions, including rainfall, humidity, and temperature. In the past, farmers were able to decide on the crop to be cultivated, monitor its growth, and determine when it could be harvested. Today, however, rapid changes in environmental conditions have made it difcult for the farming community to continue to do so. Consequently, in recent yeas, machine learning techniques have taken over the task of prediction, and this work has used several of these to determine crop yield. To ensure that a given machine learning (ML) model works at a high level of precision, it is imperative to

employ efficient feature selection methods to preprocess the raw data into an easily computable Machine Learning friendly dataset. To reduce redundancies and make the ML model more accurate, only data features that have a significant degree of relevance in determining the final output of the model must be employed. Thus, optimal feature selection arises to ensure that only

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the most relevant features are accepted as a part of the model. Conglomerating every single feature from raw data without checking for their role in the process of making the model will unnecessarily complicate our model. Furthermore, additional features which contribute little to the ML model will increase its time and space complexity and affect the accuracy of the model's output. The results depict that an ensemble technique offers better prediction accuracy than the existing classification technique.

1.INTRODUCTION

Agriculture As the sixth most populous state in India, Tamil Nadu occupies the seventh most land area. It produces more agricultural goods than any other company. The inhabitants of Tamil Nadu mostly work in agriculture. In today's cutthroat business environment, agriculture seems solid. The Cauvery River is the primary water supply. Tamil Nadu's rice bowl is the Cauvery delta area. The state of Tamil Nadu is known for its rice production. Groundnuts, sugarcane, cotton, coconuts, and paddy are among the other crops that are cultivated. There is an efficient production of bio-fertilizers. A wide variety of Agriculture has a huge effect on a country's economy, and farming is a big source of employment. Modern agricultural practices are deteriorating as a result of changes in natural elements. Sunlight, humidity, soil type, rainfall, temperature extremes (both high and low), weather, fertilizers, pesticides, and other environmental variables have a direct impact on agriculture. To thrive in agriculture, one must have knowledge about how to harvest crops correctly. Each season in India

1. The colder months of December through March
2. April through June is the summer season.
3. the monsoon, often known as the rainy season, which begins in July and continues through September

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4. Beginning in October, the post-monsoon or fall season

Seasonal and precipitation variability necessitates crop suitability evaluation. Important issues that farmers confront include crop management, anticipated crop production, and productive crop yield. Nowadays, there are a lot of young people interested in farming, thus farmers and cultivators require help with crop production.

quicker and quicker is the impact of the IT industry on evaluating real-world problems. In the agricultural sector, data is always growing. Recent developments in the Internet of Things have made it possible to access massive amounts of data in the agricultural sector. A system is required to clearly analyze agricultural data and draw out or use valuable insights from the data that is disseminated. Learning is required to get insights from data.

II. Databases conceal information In data mining, the goal is to discover patterns and insights within a dataset. Its goal is to provide farmers with precise outcomes. It uncovers long-lost patterns. It mines the massive dataset for actionable insights. This is a step in the KDD process, which stands for Knowledge Discovery in Databases. Modern advancements in the IT industry have also given rise to Machine Learning, which incorporates high speed computers and can manage massive amounts of data, complementing the KDD process. Machine learning is finding more and more uses in agriculture. Management of crops, cattle, water, and soil all make use of machine learning methods [18recommendation algorithm]. Their e-commerce offerings include customized goods. This study showcases the use of recommendation principles in agriculture, specifically in the context of crop selection. Through the use of Simple Data Analytics to crop datasets, suggestions are made to farmers on the personalization of agricultural crops.

.2.LITERATURE SURVEY

1) "A Survey on Machine Learning in Agriculture" Konstantinos G. Liakos and Patrizia Busato (2019) are the authors.

New opportunities for data-intensive research in the interdisciplinary field of Agri-technology have arisen thanks to machine learning and the proliferation of big data and high-performance computers. Here, we survey the literature on machine learning's potential uses in agricultural production systems and provide our verdict.

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2. "An Analysis of Agricultural Soils by using Data Mining Techniques"

Ramesh Babu Palepu (2020) is the author.

Agricultural data mining, especially when applied to soils, has the potential to alter the status quo of promise making and increase crop yields. When it comes to agriculture, soil analysis is key to addressing a lot of problems.

In this study, we will look at data mining's function in agricultural soil analysis, as well as various data mining techniques and the related work of various writers as they pertain to soil analysis.

3. "The Factors Influencing Crop Management Decisions in Response to Weather Conditions"

CORPORATOR: A.Swarupa Rani (2020)

The Role of Data Analytics in Weather-Reliant Crop Management. Data mining is all about taking current data sets and transforming them into something new and useful, in a way that humans can understand and use.

4."Analyzing Soil Data with Classification Techniques and Soil"

Predicting Attributes Automation and data mining are two examples of how technological progress has benefited agricultural research. Despite data mining's widespread usage and the availability of both generic and domain-specific applications, the study of data mining as it pertains to agricultural soil databases is still in its infancy. There has to be analysis and full utilization of the massive volumes of data that are now practically gathered alongside crops. The goal of this study is to use data mining methods to examine a soil dataset. Soil categorization utilizing several available methods is the main emphasis.

5) "The Indian economy is greatly impacted by smart farming using machine learning."

A structural shift, however, is causing a crisis in India's agricultural sector at the moment. Making agriculture a lucrative industry and enticing farmers to keep producing crops is the only way to solve the problem. This research article is an attempt in that direction; it aims to assist farmers in making informed choices about their agriculture via the use of machine learning. In this research, we apply supervised

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machine learning algorithms to forecast which crops would be most successful given current weather conditions and past harvest yields. On top of that, an online app is now live.

3. EXISTING SYSTEM

FEASIBILITY STUDY

Validation of the system request's feasibility is a crucial result of first inquiry. If there is enough time and money to make this work, then it can be done. The many possibilities that need to be considered include

• Operational Feasibility

• Economic Feasibility

• Technical Feasibility

Operational Feasibility:

Analyzing the potential outcomes of the proposed system is the focus of operational feasibility. Using this approach, the administrator no longer has to worry about anything, and he can easily monitor the development of the project. The amount of time and effort needed to complete tasks manually would undoubtedly decrease with this form of automation. The research showed that the system is doable in practice.

Economic Feasibility:

An evaluation of the financial rationale for a computer-based project is known as an economic feasibility or cost-benefit analysis. Hardware was integrated from the start and serves several roles, resulting in a reduced hardware project cost. The system's network architecture means that any number of users inside an organization with access to the local area network (LAN) may use the tool at any time. Building the Virtual Private Network will make use of the company's current assets. That means it's a financially viable enterprise.

Technical Feasibility:

Roger S. Pressman defines technical feasibility as an analysis of an organization's technological resources. A graphical web browser, Internet access, and an intranet or internet-compatible IBM computer are required by the company. Platform independence was a key design consideration while creating this system. The system was developed using Java

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Server Pages, JavaScript, HTML, SQL Server, and WebLogic Server. We have completed the technical feasibility. It is possible to construct the system using the current infrastructure, and it is theoretically doable.

Social feasibility

The study's focus is on gauging the user's degree of satisfaction with the system. Instruction on how to make the most of the system is a part of this. The user should not see the system as an enemy but rather as an indispensable tool. How well the user is taught and becomes used to the system determines the extent to which the users embrace it. Since he is the system's end user, it's important to boost his self-assurance so he can provide helpful critique.

4. OUTPUT SCREENS

Admin Login Page

Login Page

Registration Page

User Profile

All Remote Users

Input Dataset

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Crop Yield Predictor

Crops Statistical Data

Visualizing the Accuracy

5. CONCLUSION

This study delves further into the importance of crop management. Modern technologies can't help farmers cultivate their crops without support. Agriculturists may be advised of accurate crop predictions on a timely basis. The analysis of agricultural characteristics has made extensive use of Machine Learning methods. A literature review looks at some of the methods used in various parts of farming. Suggestions are greatly aided by Blooming Neural Networks and other forms of soft computing. When factors like productivity and season are taken into account, farmers may get suggestions that are better tailored to their needs, resulting in higher yields.

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