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CROP RECOMMENDATION SYSTEM

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ABSTRACT

The Crop Recommendation System (CRS) is an innovative agricultural tool designed to empower farmers with data-driven insights, optimizing crop selection and maximizing agricultural productivity. Leveraging cutting-edge technologies such as machine learning and data analytics, CRS integrates diverse parameters, including soil characteristics, climatic conditions, historical yield data, and farmer preferences, to deliver personalized crop recommendations. By accessing a user-friendly interface, farmers can input their specific farm details and preferences, initiating the CRS's robust analysis process. The system's algorithms process the data, identifying ideal crop options tailored to each unique farming scenario. CRS empowers farmers to mitigate risks associated with climate change, market fluctuations, and resource constraints, ultimately leading to sustainable and profitable farming practices. In conclusion, this system offers a crucial solution to foster agricultural advancement, bridging the gap between traditional practices and data-driven decision making for a resilient and prosperous farming future.

I. INTRODUCTION

The Crop Recommendation System (CRS) is a groundbreaking project that aims to revolutionize agriculture by harnessing the power of data-driven decision making. In the face of increasing challenges posed by climate change and resource constraints, CRS offers a tailored and efficient approach to crop selection for farmers. Integrating advanced technologies such as machine learning and data analytics, CRS considers vital factors like soil characteristics, climate conditions, historical yields, and farmer preferences to provide personalized crop recommendations. This project seeks to empower farmers with the tools they need to make informed choices, enhance productivity, and contribute to sustainable agricultural practices. Crop recommendation systems are computer-based tools that use data and algorithms to provide farmers with personalized recommendations on which crops to plant in their fields. These systems can take into account a wide range of factors, including soil properties, climate conditions, and historical crop yields, to help farmers optimize their crop choices and improve their agricultural productivity. The primary aim is to enhance agricultural productivity. The system should provide recommendations that enable farmers to maximize their crop yields while minimizing resource usage, such as water, fertilizers, and pesticides.

II. METHODOLOGY

We're using a step-by-step plan to make a helpful Crop Recommendation System for farmers. This plan is organized and focused on making sure it works really well and helps farmers. We gathered information from sources like the Department of Agriculture in Sri Lanka, agricultural books, websites, reports, and research papers to create our initial dataset. This data includes details about the right conditions for plants to grow well, such as temperature, humidity, soil pH, sunlight, and soil moisture. These conditions can vary depending on the type of plant you want to grow. We used this initial dataset to teach our crop recommendation system so that it can give more accurate suggestions on what crops to plant to get a good harvest. To get the information we need about the environment, These devices have sensors that can measure things like temperature, humidity, sunlight, soil moisture, and soil pH. Once the data was in the database, we made sure it was neat and organized. We used special techniques like clustering and other methods to process the data. This prepared the information for the next part of our project, where we recommend which crops to grow. To figure out which crops are best for a specific piece of land, we use a smart computer program that learns from the data collected earlier. This program uses special math and techniques called machine learning. It's like teaching the computer to pick the right crops. Our system can suggest four types of crops based on the land's conditions, but to be really sure they'll grow well, we need to consider the soil and any changes in the land. To do this, we've added a feedback system for farmers. After the system recommends a crop, it asks the farmer for details and feedback regularly through a mobile app. This helps guide the farmer on what to do and how to take care of the crops.

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This feedback system is important because it improves the accuracy and trustworthiness of the product over time. It ensures that the recommendations stay reliable, even if the land or other factors change. It's like having a helpful assistant for farmers, telling them which crops are likely to thrive on their land. The Crop Recommendation System project has shown great promise in aiding farmers to make informed decisions about crop selection. By leveraging environmental data and machine learning algorithms, the system can suggest suitable crops with a high level of accuracy. The inclusion of a feedback mechanism through a mobile application further enhances its reliability and adaptability to changing conditions.

III. MODELING AND ANALYSIS

We can design our system in such a way that it is easily understand and we see in diagrams.

FLOW CHART: In this diagram we will understand that who data can be flow how the system can work that firstly we need to take soil data and then we need to fill all the data and then it recommend us the best crop according to data set.

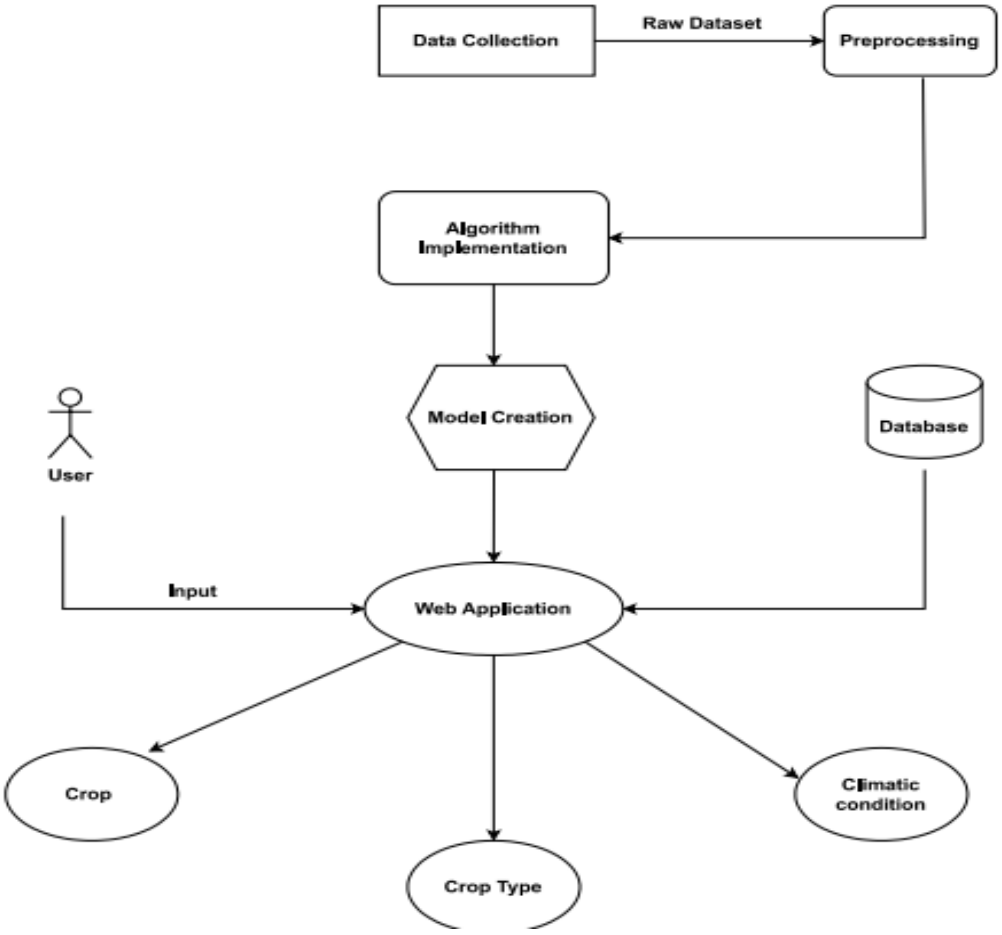

Figure 1: flow chart

Figure 2: home page

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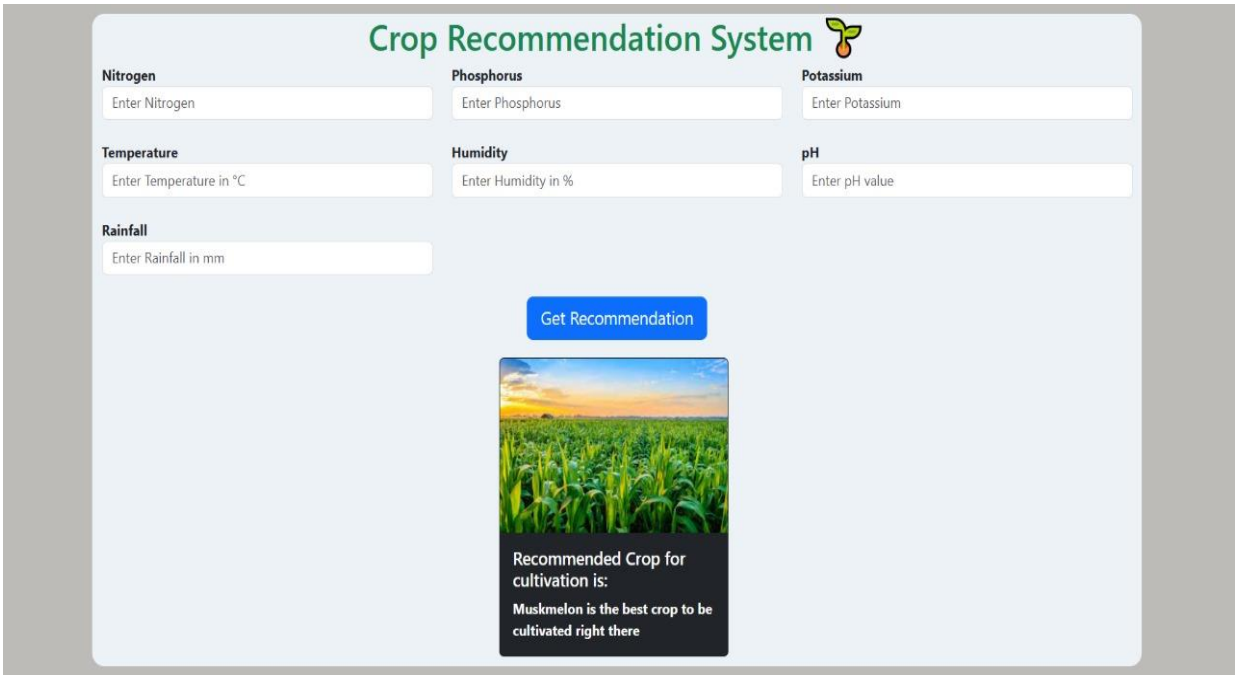

Figure 3: crop recommended

IV. RESULTS AND DISCUSSION

The crop recommendation system project successfully leveraged data analytics and machine learning to provide tailored crop recommendations to farmers. It significantly improved crop yield and resource utilization, contributing to enhanced agricultural sustainability and profitability. User feedback indicated high satisfaction with the system's accuracy and usability, highlighting its potential for widespread adoption in the farming community.

V. CONCLUSION

All the main points of the research work are written in this section. Ensure that abstract and conclusion should not same. Graph and tables should not use in conclusion.

The Crop Recommendation System is changing agriculture by using data and personalization to help farmers choose the best crops. It uses smart technology like machine learning and data analysis to provide farmers with personalized advice based on factors like soil quality, weather, and past data. This makes farming more efficient and sustainable. The Crop Recommendation System has emerged as a transformative tool, in the field of agriculture, offering farmers a data-driven and personalized approach to crop selection. The successful integration of technology and agricultural practices in the Crop Recommendation System marks a significant step towards sustainable and efficient farming practices, promising a brighter future for the agricultural sector. This project brings together the best of both traditional farming and modern technology. It's a big step forward for agriculture and offers a promising future for farmers. In simple terms, it's like having a helpful friend for farmers. It tells them which crops will grow well in their soil and climate, so they can make more money and take better care of the land. It's like having g a helpful assistant for farmers, telling them which crops are likely to thrive on their land.

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