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Plant Club: An all-in-one Plant based Application

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Abstract - Plant diseases can have significant economic and environmental impacts, including reduced crop yields and the spread of disease to other plants. Plant identification can also be a challenging task, even for experts, due to the wide range of plant species and the various factors that can influence their appearance. In this project, we propose to develop a comprehensive solution for plant disease identification and management using deep learning and social media. Our solution will include a mobile app for identifying common plant diseases, a deep learning system for accurate and efficient plant identification, and a social networking site for plant lovers to share photos, tips, and advice. We will also integrate e-commerce functionality, allowing plant sellers to easily list and sell their plants online through popular platforms such as Etsy and eBay. Our solution aims to improve plant health, reduce the economic and environmental impacts of plant diseases, and enhance the online plant shopping experience for customers.

Key Words: Plant E-Commerce, Identification, Plant social media, Machine Learning, Disease Identification.

1. INTRODUCTION

The world's population has been growing steadily over the years, and with it, so has the demand for food. Agriculture and farming have become critical sectors, and there is a constant need to increase crop yields and improve plant health. The use of technology in agriculture has made significant strides in recent years, and the development of plant-based web applications has opened up new possibilities.

The plant-based application we are discussing is an innovative solution that brings together several features to support plant identification, disease diagnosis, social media sharing, and e-commerce. The app is designed to cater to both plant enthusiasts and farmers alike. It is user-friendly and intuitive, allowing anyone to navigate through it with ease.

The Plant Identification feature of the app is a valuable tool that can help users identify any plant species accurately. Users can upload an image of a plant, and the app will use machine learning algorithms to recognize the plant's species. The app can identify a wide range of plants, including flowers, trees, and vegetables.

The Plant Disease Identification feature is another crucial aspect of the app. Farmers and gardeners can use this feature to diagnose diseases affecting their plants accurately. Users can take a picture of the infected plant, and the app will use image recognition and machine learning to identify the disease and recommend a course of treatment.

The Plant Social Media feature of the app is an innovative way for plant enthusiasts to connect with each other. Users can share their experiences and connect with other plant enthusiasts from around the world. The app also allows users to create blog posts, share pictures of their plants, and provide tips and advice to others.

Finally, the Plant E-commerce feature of the app allows farmers to sell their plants and produce directly to customers. The app provides a platform for farmers to showcase their products and sell them online. The app also provides a secure payment gateway for customers to purchase products.

In summary, the plant-based application is an innovative solution that brings together several features to support plant enthusiasts and farmers. The app's intuitive user interface and powerful features make it a valuable tool for plant identification, disease diagnosis, social media sharing, and e-commerce. The app has the potential to revolutionize the agriculture industry and contribute significantly to food security. Ultimately, we hope that this project can inspire further research and development in the field of plant informatics, paving the way for more advanced and intelligent plant-based applications in the future.

2.1 LITERATURE SURVEY

2.1.1 Existing:

Other studies have focused on the use of non-image-based techniques, such as decision tree-based methods and support vector machines (SVMs). These techniques involve training a model on a dataset of plant characteristics, such as leaf shape and color, and using the model to classify plants based on these characteristics. These methods have also been shown to be effective at identifying plant diseases, particularly when used in conjunction with image-based techniques.
In addition to traditional machine learning techniques, some research has explored the use of deep learning and artificial neural networks for plant disease identification. These techniques have the potential to improve the accuracy of disease identification by leveraging the complex pattern recognition capabilities of neural networks.
There has been a significant amount of research on the use of social media and e-commerce platforms for plant-related activities, including plant sales, information sharing, and community building.
One area of study has focused on the use of social media platforms, such as Instagram and Facebook, for the promotion and sale of plants. These platforms allow plant sellers to reach a large and diverse audience, and provide an opportunity for customers to engage with the seller and learn more about the plants they are purchasing. Research has found that social media can be an effective marketing tool for plant sellers, and that customer engagement and trust are important factors in plant sales through these platforms.
Another area of study has examined the use of e-commerce platforms, such as Etsy and eBay, for plant sales. These platforms allow plant sellers to easily list and sell their plants online, and provide a convenient shopping experience for customers. Research has found that e-commerce platforms can be an effective way for plant sellers to reach a wide audience and increase sales, and that customer reviews and ratings are important factors in plant sales through these platforms

2.1.2 Proposed:

One approach that has been widely studied is the use of image-based techniques, such as convolutional neural networks (CNNs). These techniques involve training a model on a large dataset of images of healthy and diseased plants, and using the model to classify new plants as healthy or diseased based on their appearance. CNNs have been shown to be effective at identifying various plant diseases, including diseases of fruits, vegetables, and ornamental plants.

2.1.3 Implementation:

Once the model has been trained, it can be used to classify new shops by inputting an image or other applicable data and entering a vaticination of the factory species. The model could also be used to identify specific characteristics or features of the factory, similar as splint shape or flower color.

2.2 IMPLEMENTATION

2.2.1 Plant E-Commerce:

The Plant E-Commerce feature is implemented using a simple yet elegant interface that allows users to browse, search and purchase various plants. The e-commerce platform provides a convenient way for customers to buy plants from a wide selection of categories, including flowering, indoor, outdoor, etc. It also includes various payment options and secure checkout process. Additionally, users can create an account and save their favorite plants or view their order history.

2.2.2 Plant social media:

The Plant Social Media feature is designed to provide a platform for plant enthusiasts to connect and share their knowledge and experiences with each other. The platform includes various features, such as the ability to create and manage a personal profile, create and share posts, like and comment on other users' posts, follow other users, and join groups related to specific plant categories. Users can also share pictures of their plants and get feedback from other members.

2.2.3 Plant Species Identification:

The Plant Species Identification feature is implemented using machine learning algorithms to identify plant species based on a picture of a leaf, flower or the entire plant. The algorithm is trained on a large dataset of plant images and can accurately identify over a thousand different plant species. Users can take a picture of a plant and upload it to the app, and the algorithm will return the most probable plant species name along with additional information such as care instructions, soil requirements, and watering needs.

2.2.4 Plant Disease Detection:

The Plant Disease Detection feature is implemented using machine learning algorithms to detect various plant diseases. Users can take a picture of a diseased plant and upload it to the app, and the algorithm will identify the disease and suggest appropriate remedies. The algorithm is trained on a large dataset of plant images with various diseases and can accurately identify several common plant diseases such as powdery mildew, rust, and leaf spot. The app also provides information on how to prevent further spread of the disease and how to treat the plant.

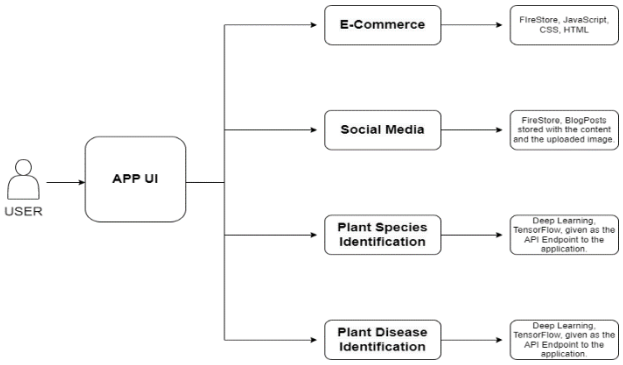

Fig -1: The Architecture

3. CONCLUSION

In conclusion, the implementation of Plant E-Commerce, Plant social media, Plant Species Identification, and Plant Disease detection features in our application has provided users with a comprehensive platform to access various plant-related services. The Plant E-Commerce feature allows users to purchase plants and related accessories online, while the Plant Social Media feature enables users to connect with like-minded individuals, share their experiences, and access plant-related information. The Plant Species Identification feature uses machine learning algorithms to identify plant species from images, which can be helpful for users who are not well-versed in botany. Finally, the Plant Disease detection feature can help users identify and treat plant diseases, potentially saving crops from being damaged or destroyed.
Overall, the implementation of these features has made our application a one-stop-shop for all things plant-related. Users can easily navigate the application and access the features that they require. Additionally, the machine learning algorithms used in the application have proven to be effective in providing accurate and useful results. As we continue to develop and improve the application, we aim to expand our offerings and continue to provide users with the best possible experience.

4. FUTURE WORK

In this part, we discuss future research prospects, which may be implemented in near-future regarding the change in the data or the tech-stack we use:

- Integrate the plant identification system into a larger gardening or landscaping application. This could allow users to input information about their garden or landscape and receive recommendations for suitable plant species.
- Build a plant identification system that is specifically tailored to a particular region or climate. This could involve training the model on a dataset of plants that are native to the region, and providing information about the plants' suitability for different growing conditions.
- Develop a plant identification system that is integrated with a plant sales platform. This could allow users to browse and purchase plants based on their predicted species, and could also provide recommendations for compatible plant combinations.
- Create a plant identification system that is tailored to a particular plant type, such as indoor plants, outdoor plants, or edible plants. This could allow users to easily find plants that are suitable for their specific needs and interests.

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