SMART INDIA HACKATHON 2023

DHANVANTRI

YOUR HERBAL HEALTH COMPANION

The Problem We Are Solving

Identification of Different Medicinal Plants/Raw materials through Image Processing Using Machine Learning Algorithms

1. Database and Labeling: Create a comprehensive image database of medicinal plants, labeling each image with scientific and common names, geographical and seasonal variations, and distinguishing features.

2. Machine Learning Models: Develop machine learning models, such as convolutional neural networks (CNNs), to recognize and classify medicinal plants based on their images.

3. User-Friendly Software: Design user-friendly software that allows users in the supply chain to upload plant images for identification and information retrieval.

4. Accuracy and Adaptability: Ensure the software accounts for geographical and seasonal variations, providing accurate identifications and additional plant information.

5. Continuous Improvement: Regularly update the software, database, and models, while educating users to enhance the reliable identification of medicinal plants and promote sustainable practices in Ayurvedic Pharmaceutics.

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INTRODUCTION

This presentation will discuss how machine learning algorithms can be utilized to revolutionize medicinal plant identification through image processing. With the growing demand for natural remedies, it is crucial to accurately identify medicinal plants. Our approach will improve the speed and accuracy of plant identification.

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USER AUTHENTICATION USES BLOCKCHAIN

Digital ID: Users create a secure digital identity on the blockchain.
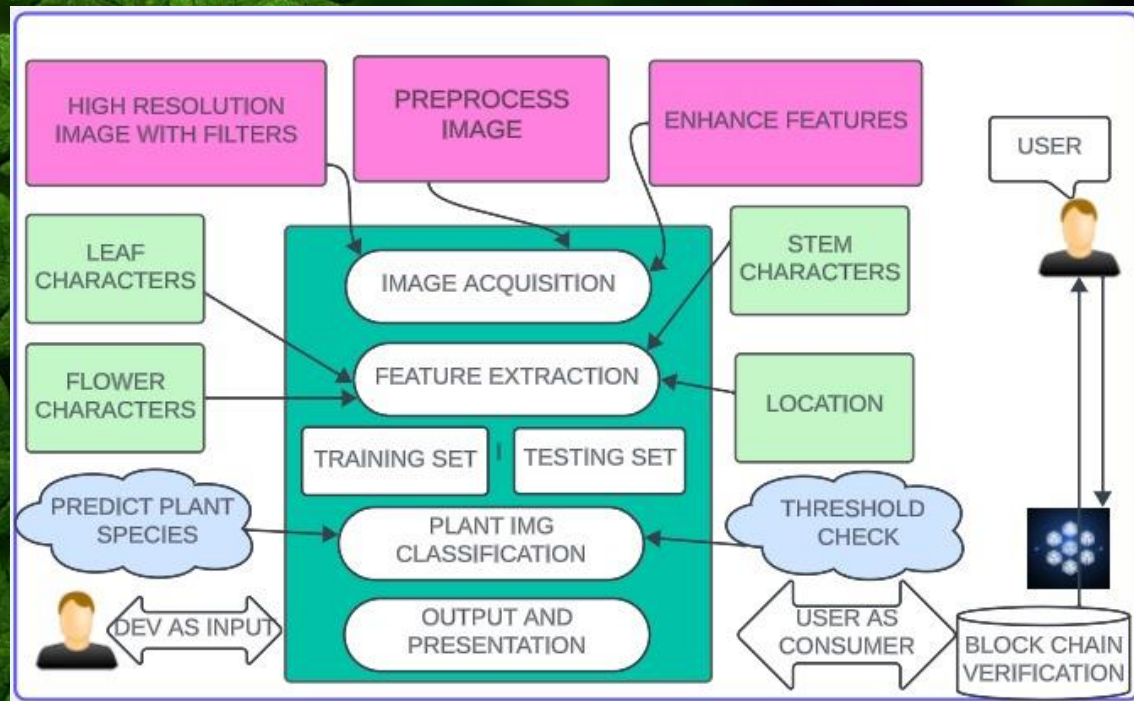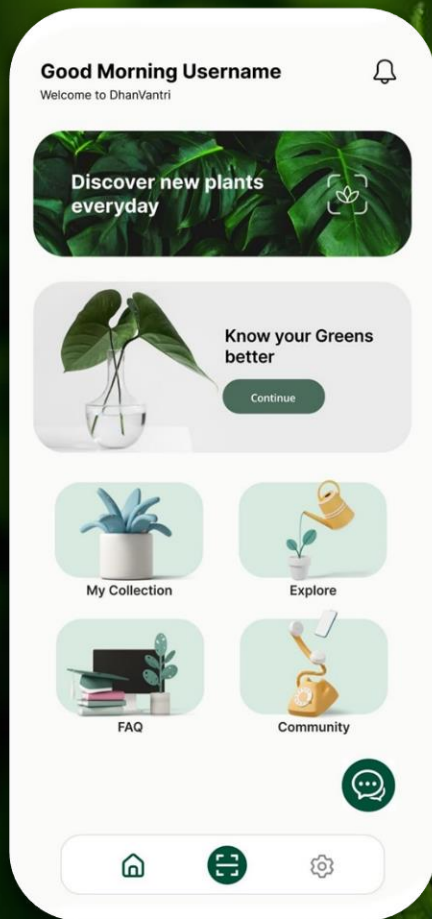
Decentralized Storage: Identity information is stored in a decentralized manner.

Authentication Tokens: Blockchain generates secure tokens for user verification.

Smart Contract Verification: Smart contracts on the blockchain verify user identity.

Enhanced Security and Control: Users enjoy improved security and control over their data.

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MEDICINAL PLANT IDENTIFICATION

Medicinal plants have been used for centuries to treat various ailments. However, accurate identification of these plants is essential to ensure their therapeutic benefits and avoid harmful effects. Our image processing approach with machine learning algorithms can identify medicinal plants with high accuracy and speed.

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Image Processing

Image processing is the analysis and manipulation of digital images. Our approach utilizes advanced image processing techniques to extract features from plant images. These features are then used to train machine learning models to accurately identify medicinal plants.

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MACHINE LEARNING ALGORITHMS

Machine learning algorithms are used to train models to recognize patterns in data. Our approach utilizes various machine learning algorithms such as convolutional neural networks and decision trees to classify medicinal plants. These algorithms can learn from large datasets and improve the accuracy of plant identification.
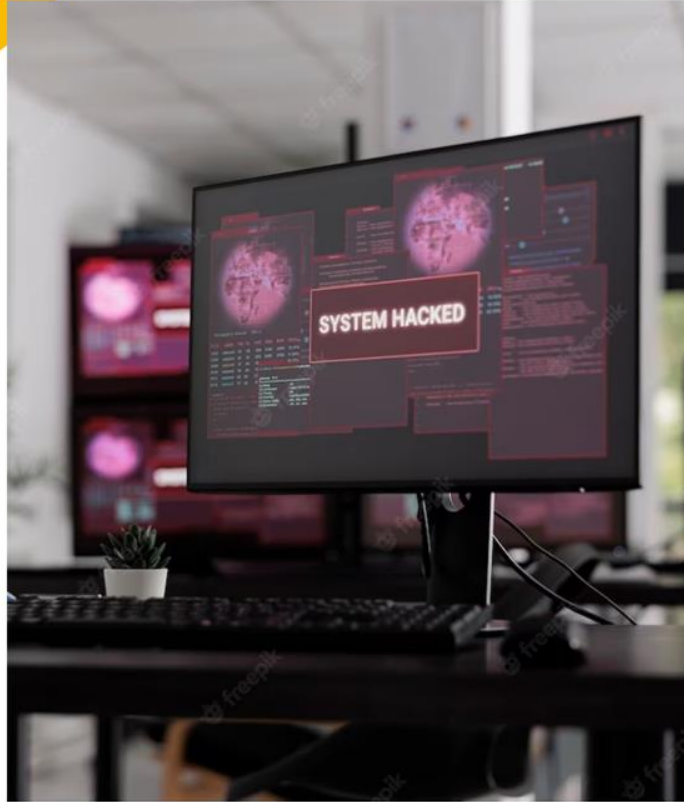

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DATASET COLLECTION

To train our machine learning models, we need a large dataset of plant images. We have collected images from various sources such as botanical gardens, herbaria, and online databases. Our dataset includes images of different plant parts such as leaves, flowers, and fruits.

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FEATURE EXTRACTION

Feature extraction is the process of identifying important characteristics of an image. Our approach uses various feature extraction techniques such as color histograms, texture analysis, and shape descriptors to extract features from plant images. These features are then used to train our machine learning models.

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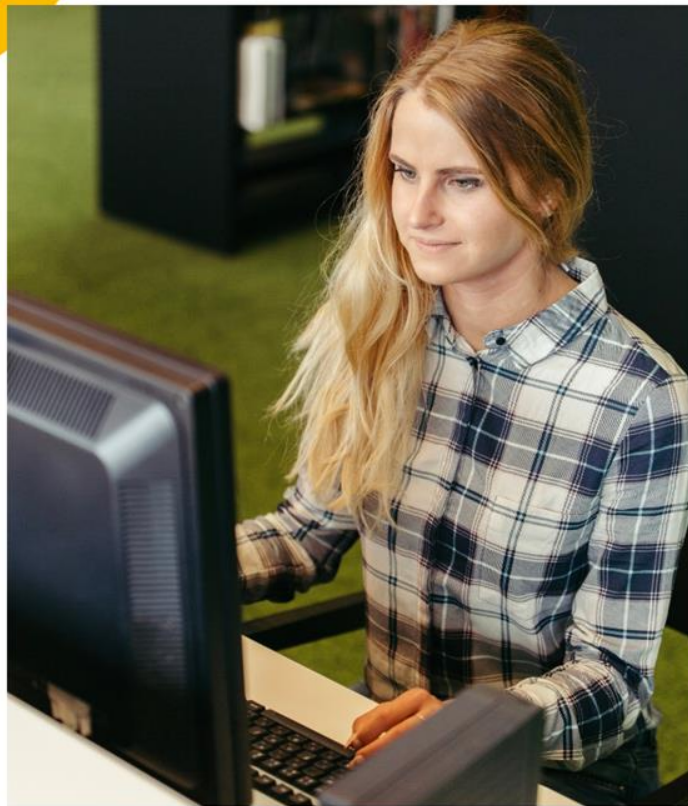
MODEL TRAINING

Once we have extracted features from plant images, we use them to train our machine learning models. We use a combination of supervised and unsupervised learning techniques to train our models. Our models are then evaluated using various performance metrics such as accuracy and precision.

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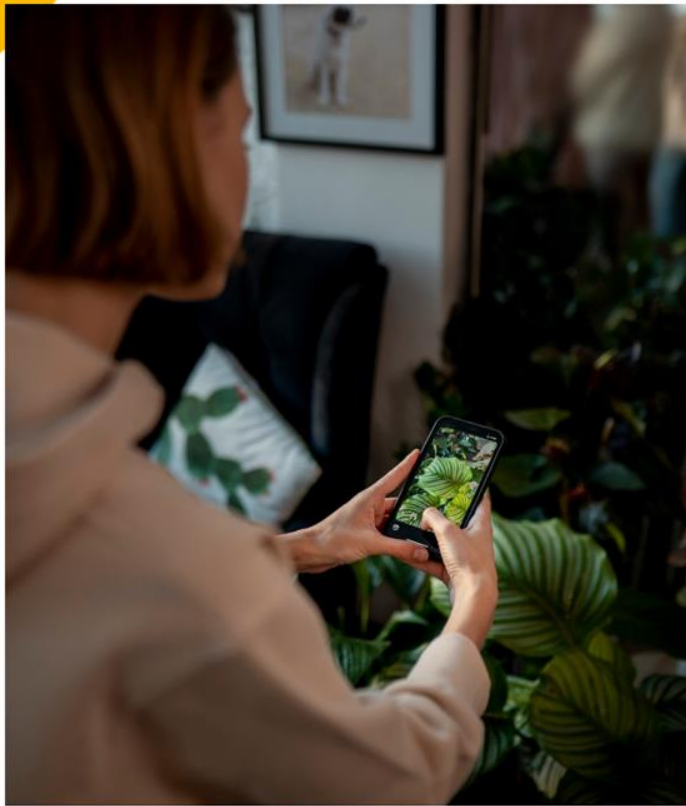
PLANT IDENTIFICATION

Our approach can accurately identify medicinal plants based on their images. This can be useful for various applications such as drug discovery, conservation, and education. Our approach can also be extended to identify other plant species for various purposes.

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FUTURE DIRECTIONS

Our approach has the potential to revolutionize medicinal plant identification. In the future, we plan to expand our dataset to include more plant species and develop mobile applications for plant identification. We also plan to collaborate with researchers and organizations to promote the use of our approach for various applications.

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CONCLUSION

In conclusion, our image processing approach with machine learning algorithms can revolutionize medicinal plant identification. Our approach can improve the speed and accuracy of plant identification and has various applications in drug discovery, conservation, and education. We hope that our approach will be widely adopted and contribute to the advancement of natural remedies.

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THANKYOU

Thank you for taking the time to explore our plant image recognition app. We hope this presentation has provided you with valuable insights into the exciting world of plant identification and its applications. Our journey to create this app has been a labor of love, fueled by our passion for plants and technology. We couldn't have achieved this without the support of our amazing team and the encouragement of our users and partners.