International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 15 Issue 02 , February - 2026

DRAV-AI : An AI-Based Medicinal Plant Identification and Ayurvedic Wellness Recommendation System

Prof. T. A. Puranik
1Assistant Professor,Computer Science and Engineering Department,Shri Sant Gajanan Maharaj College of engineering, Shegaon

Gauri R. Patil, Janhavi S. Kolhe, Sanika R. Jumale, Sanchita R. Gahlod
B.E. Students, Computer Science and Engineering,Shri Sant Gajanan Maharaj College of Engineering, Shegaon

ABSTRACT - The integration of Artificial Intelligence (AI) into the field of Ayurvedic Science has gained considerable attention in recent years. With the increasing demand for holistic well-being and alternative healing practices, there has been a surge in innovative approaches to integrating technology in this sector. This innovative framework unites AI-driven image classification, health-focused chat interaction, and ancient Ayurvedic knowledge to deliver an intelligent plant identification and symptom-remedy guidance system. A ResNet50 convolutional neural network, fine-tuned via transfer learning, is employed to accurately classify medicinal plants from a labeled dataset, enhanced through preprocessing and augmentation. Upon plant identification, a generative AI model provides detailed therapeutic insights, including the plant's bioactive compounds and Ayurvedic uses. The integrated chatbot further enables users to input symptoms and receive contextually relevant Ayurvedic remedies sourced from a curated symptom-remedy database. This system not only bridges modern AI technology with ancient healing practices but also empowers users with accessible, personalized, and holistic health guidance.

Keywords- Artificial Intelligence (AI), Image Classification, Health Chatbot.

I . INTRODUCTION

For centuries, medicinal plants have formed the backbone of traditional healing systems, especially in Ayurveda India's ancient science of life. However, identifying these plants and understanding their therapeutic uses remains largely the domain of experts or age-old traditions passed orally. In today's fast-paced world, where healthcare access is either limited or expensive for many, leveraging AI to reconnect people with natural remedies can empower communities, reduce dependence on synthetic drugs, and promote preventive care.

This paper bridges the ancient wisdom of Ayurveda with the cutting-edge potential of artificial intelligence. The "AI-Powered Medicinal Plant Identifier with Health Chatbot and Ayurvedic Remedy Recommendation System" is an all-in-one platform that helps users identify medicinal plants from photographs, learn about their uses, and explore customized Ayurvedic home remedies based on symptoms they input. Built with a ResNet50 deep learning model in Python and trained on a curated Kaggle dataset of plant images, this system is designed to ensure high accuracy and robustness in plant identification.

Post-identification, a generative AI module automatically delivers an information-rich summary describing the plant's medicinal properties, applications, and health benefits. This makes it highly user-friendly for individuals with minimal botanical or Ayurvedic knowledge. To enhance interactivity, the system includes a health chatbot that responds to user queries and guides them on symptom-specific remedies.

By focusing on natural healing and wellness, this system aligns with global shifts toward sustainable living and holistic healthcare. It has potential applications in rural health outreach, personal wellness, traditional medicine research, and educational tools for herbal studies. The platform's modular structure allows it to be expanded for multilingual use, regional plant recognition, and integration with wearable health trackers. This paper is more than an AI experiment; it's a step towards reviving age-old natural healing systems through intelligent design and accessible technology.

II . LITERATURE REVIEW

[1] A. Gopal, et al. The paper aims at implementing such a system using image processing with images of the plant leaves as a basis of classification. The software returns the closest match to the query. The proposed algorithm is

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 15 Issue 02 , February - 2026

implemented and the efficiency of the system is found by testing it on 10 different plant species. The software is trained with 100 (10 number of each plant species) leaves and tested with 50 (tested with different plant species) leaves.

[2] Umme Habiba, et al. The author presents a Multi-channel Modified Local Gradient Pattern (MCMLGP), a new texture-based feature descriptor that uses different channels of color images for extracting more significant features to improve the performance of classification. They have trained our proposed approach using SVM classifier with various kernels such as linear, polynomial and HI. In addition, we have used different feature descriptors for comparative experimental analysis with MCMLGP by conducting the rigorous experiment on our own medicinal plants dataset.

[3] R. Janani, et al. They have proposed a method for the extraction of shape, color and texture features from leaf images and training an artificial neural network (ANN) classifier to identify the exact leaf class. The key issue lies in the selection of proper image input features to attain high efficiency with less computational complexity. They tested the accuracy of the network with different combinations of image features.

[4] Vijayashree. T, et al. In this paper, a database is created with 127 herbal leaves. For creating a database 11 texture parameters are taken into account. The parameters are Sum of Variance, Inverse Difference Moment, Aspect ratio, Correlation, Sum Entropy, Mean, and Sum Average. Gray level co-occurrence matrix (GLCM) is used for determining the parameters like entropy, homogeneity, contrast and energy. A test image is taken and compared with the database; the dissimilarity is calculated with the extracted parameters. The one with least dissimilarity is identified as the leaf and the output is displayed.

[5] D Venkataraman, et al. In this paper, a system is developed which would provide a solution for this by identifying the plant and providing it's medicinal values, thereby helping in the cure of many ailments in a natural way. This paper discusses the dataset collection, feature extraction using texture and HOG and thereby classifying based on the Support Vector Machine algorithm.

[6] Shitala Prasad, et al. In this paper, the author proposes a knowledge transfer from object identification to plant species identification where the raw plant leaf image is represented into deep features. These deep features are experimentally proved to out-perform the state-of-the-art in plant species recognition. These paper presents a new and efficient technique for leaf acquisition. Secondly, the image is transformed to device independent lαß color space that is further used to compute VGG-16 feature map. This feature map is re-projected to PCA subspace to optimize the performance for species recognition.

[7] Dileep M.R., et al. This work proposes AyurLeaf, a Deep Learning based Convolutional Neural Network (CNN) model, to classify medicinal plants using leaf features such as shape, size, color, texture etc. This research work also proposes a standard dataset for medicinal plants, commonly seen in various regions of Kerala, the state on southwestern coast of India. The proposed dataset contains leaf samples from 40 medicinal plants. A deep neural network inspired from Alexnet is utilised for the efficient feature extraction from the dataset. Finally, the classification is performed using Softmax and SVM classifiers.

[8] C. Amudha Lingeswaran, et al. The author, with the availability of modern computing devices and technology, had built a model (Deep Neural Networks) for the identification of medicinal plants. To train the model we used around 8,000 images belonging to four different classes. Finally, we arrived with good accuracy of 85% when testing with images taken from the open field land areas.

[9] Manojkumar P., et al. This paper explores feature vectors from both the front and back side of a green leaf along with morphological features to arrive at a unique optimum combination of features that maximizes the identification rate. A database of medicinal plant leaves is created from scanned images of front and back side of leaves of commonly used ayurvedic medicinal plants. The leaves are classified based on the unique feature combination. Identification rates up to 99% have been obtained when tested over a wide spectrum of classifiers.

[10] Amala Sabu, Sreekumar K, et al. This paper proposes a computer vision approach for the recognition of ayurvedic medicinal plant species found in Western Ghats of India. The proposed system uses a combination of SURF and HOG features extracted from leaf images and a classification using k-NN classifier. These experiments show results which seem to be sufficient for building apps for real life use.

III. METHODOLOGY

The development of this paper follows a structured and modular research methodology that seamlessly blends deep learning, natural language processing, and traditional Ayurvedic knowledge. The process begins with the collection and preprocessing of data, where a labeled Kaggle dataset of Ayurvedic and medicinal plant images is utilized. These images undergo preprocessing techniques such as resizing, normalization, and augmentation to improve model robustness and prevent overfitting. The core of the system lies in the ResNet50 deep convolutional neural network model, selected for its proven accuracy in image classification tasks. This model will be fine-tuned using transfer learning,

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 15 Issue 02 , February - 2026

optimized with the Adam optimizer, and evaluated using performance metrics like precision, recall, and F1-score to ensure accurate plant identification.

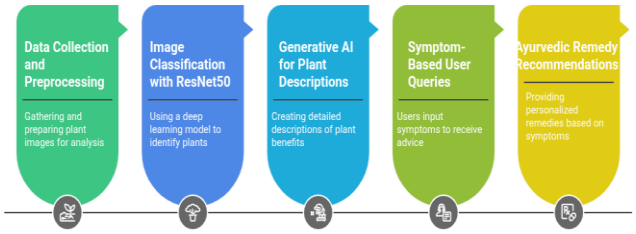


Fig. 1 System Architecture Diagram

Once the plant is identified, a generative AI module, based on models similar to GPT, will automatically generate rich textual descriptions about the plant's therapeutic benefits, bioactive compounds, and traditional uses in Ayurveda. This chatbot is designed to understand symptom-based user queries and respond with appropriate advice derived from a curated Ayurvedic symptom-remedy database. The backend of the system integrates this symptom input with the identified plant's medicinal profile to recommend personalized Ayurvedic home remedies that are safe, effective, and contextually relevant. This comprehensive methodology ensures that the system is not only technologically advanced but also deeply rooted in the time-tested principles of natural and holistic healing.

FLOW CHART

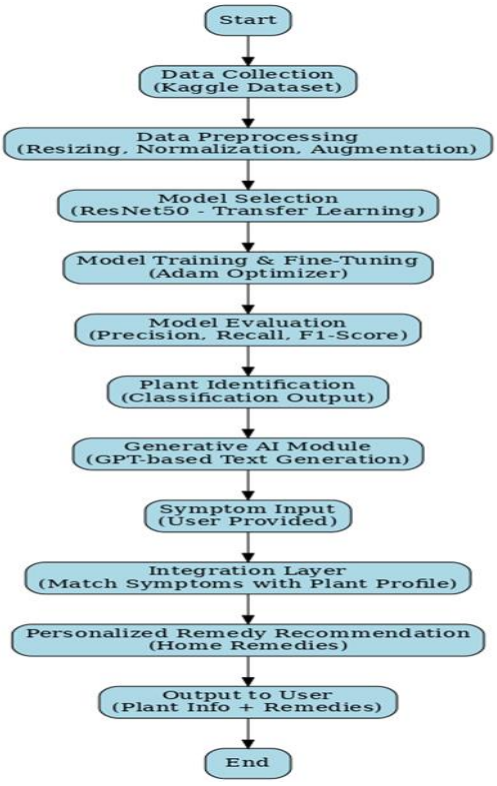


Fig 2 Flowchart of System

IV . WORKING

The system begins by allowing the user to upload an image of a medicinal plant, which is first enhanced through image preprocessing techniques to improve clarity and feature extraction. The processed image is then analyzed by a ResNet50 deep learning model to accurately identify the plant species. Once identified, generative AI produces a brief description highlighting the plant's medicinal benefits. The user can then enter symptoms, which are interpreted by a chatbot to understand the health concern. Based on this analysis, the system recommends suitable Ayurvedic remedies, and the final results are displayed to the user in an interactive format.

V. SYSTEM REQUIREMENT

SOFTWARE REQUIREMENT

- Programming Language : Python 3.x
- Web Framework : Flask
- Frontend Technologies : HTML5, CSS3, JavaScript
- Deep Learning Libraries : TensorFlow / Pytorch, OpenCV, Scikit-learn.

VI. IMPLEMENTATION & RESULT

IMPLEMENTATION

Step 1 : Importing Libraries and Preparing the Training Environment

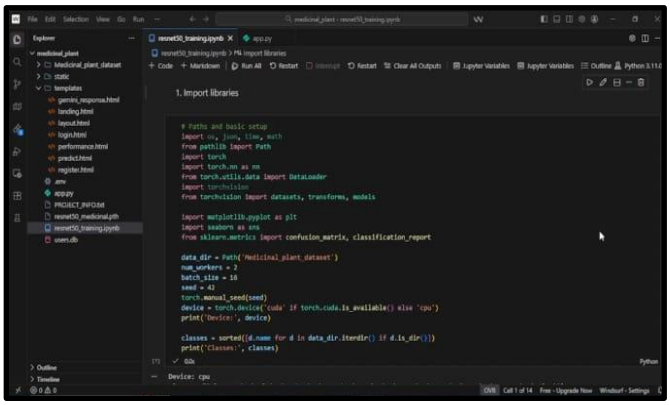


Fig. 3 ResNet50 Model Initialization and Dataset Configuration in Python

This image illustrates the initial stage of the deep learning workflow where essential Python libraries and frameworks are imported for medicinal plant image classification. It shows the setup of paths, dataset parameters, device configuration (CPU/GPU), and class extraction required before training the ResNet50 model.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 15 Issue 02 , February - 2026

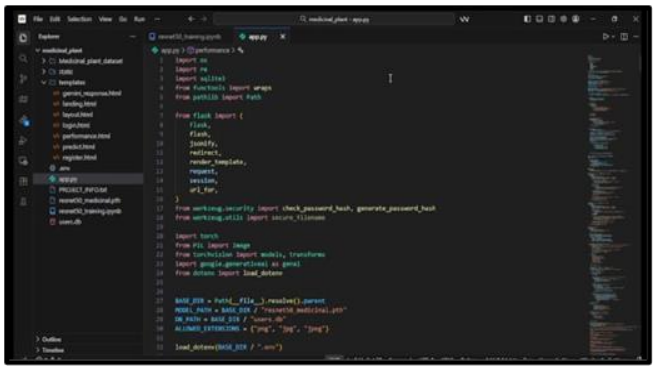


Fig. 4 Flask Backend Setup for AI-Based Medicinal Plant Identification System

The image shows the code of the project means the app.py file. The user will run the code and the URL will be generated.

Step 3 : User Interface Initialization and System Access Selection

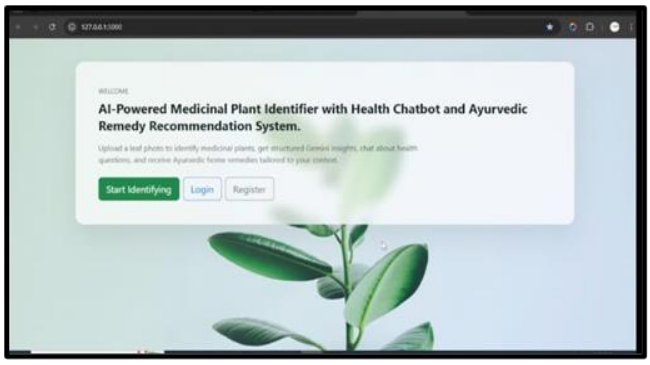


Fig. 5 Home Interface of AI-Based Medicinal Plant Identification System

This image shows the main landing page of the AI-powered medicinal plant identification platform integrated with a health chatbot and Ayurvedic remedy recommendation system. The interface allows users to begin plant identification or access personalized features through login and registration options.

Step 4 : New User Account Creation

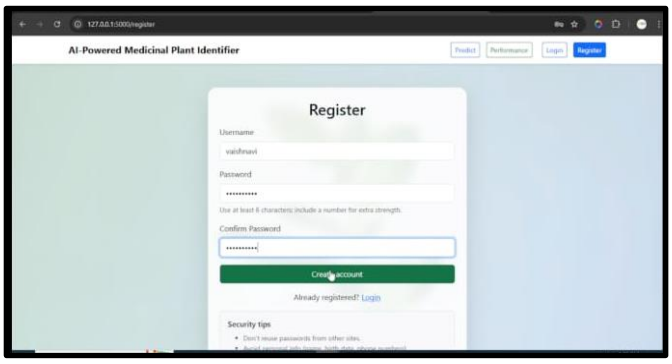


Fig. 6 User Registration Page of AI-Powered Medicinal Plant Identification System

This image displays the registration interface of the system where new users create an account by providing a username and secure password.

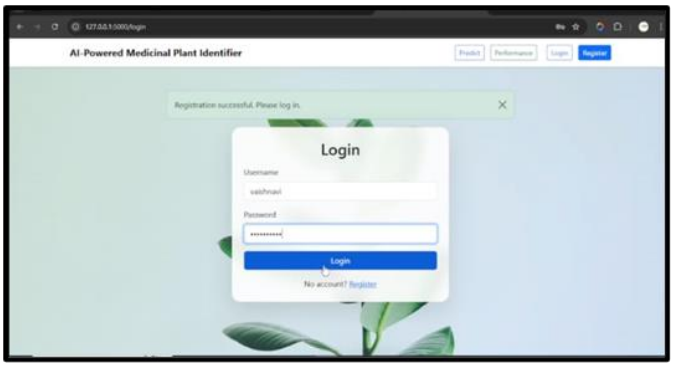


Fig. 7 User Login Interface of AI-Powered Medicinal Plant Identification System

This image illustrates the login page of the application where registered users securely access the system using their credentials.

Step 5 : Uploading Leaf Image and Querying the Health Chatbot

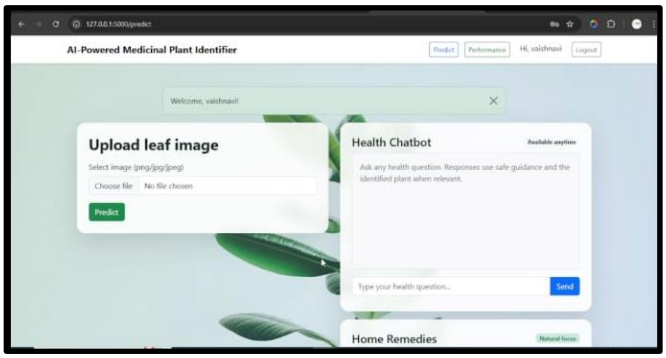


Fig. 8 Shows the Plant Image Upload and Health Chatbot Interaction Interface

This image shows the main functional dashboard where users upload a medicinal plant leaf image for identification. Alongside image submission, an integrated health chatbot allows users to ask symptom-related questions and receive guidance linked to the identified plant.

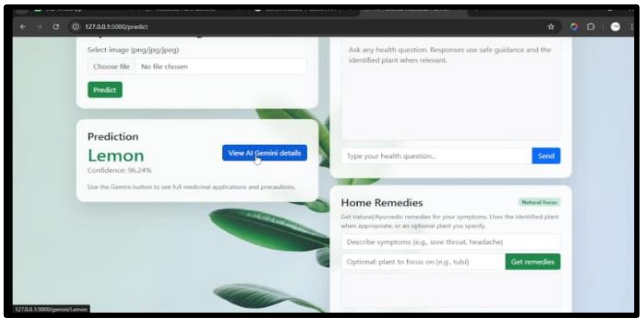


Fig. 9 Medicinal Plant Prediction Output and Ayurvedic Remedy Interface

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 15 Issue 02 , February - 2026

This image presents the system's prediction result after analyzing the uploaded leaf image, displaying the identified plant along with confidence level. It also provides access to detailed AI-generated information and a section for suggesting home remedies based on user-described symptoms.

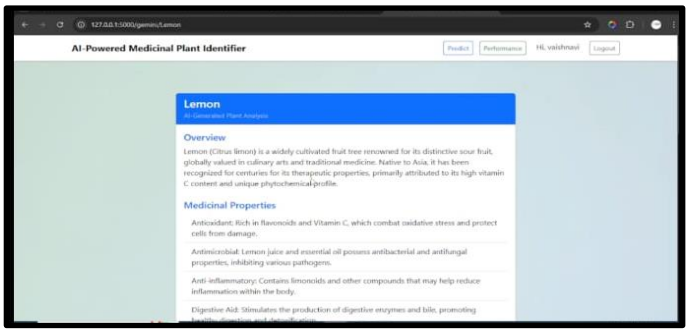


Fig. 10 AI-Generated Medicinal Plant Information Display

This image shows the detailed information page generated after successful plant identification, presenting an overview and medicinal properties of the detected plant.

RESULT

The developed system successfully integrates deep learning and generative AI to identify medicinal plants and provide relevant Ayurvedic remedy recommendations. The ResNet50 model delivers accurate plant classification, while the chatbot effectively interprets user symptoms to suggest suitable natural treatments. Overall, the system demonstrates reliable performance, user-friendly interaction, and practical applicability in supporting preliminary healthcare guidance.

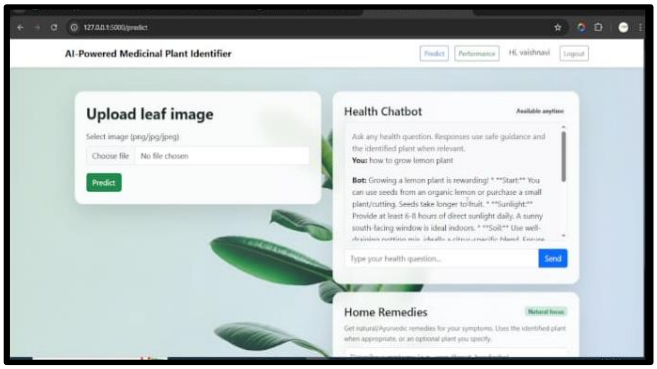


Fig. 11 Health Chatbot Response

This figure shows the chatbot response to the user. The chatbot gives the response about guidance or plant care queries to the user.

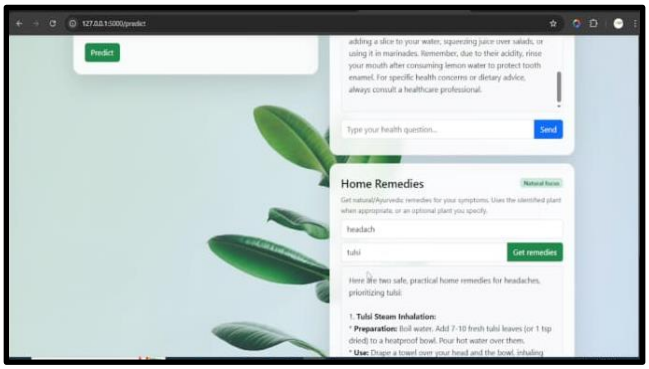
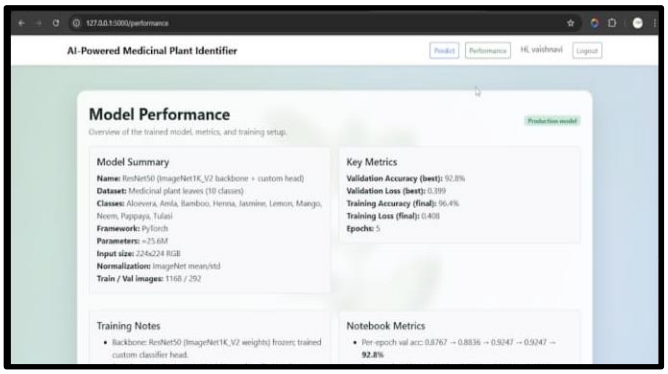


Fig. 12 Ayurvedic Home Remedy Recommendation Output

This image shows the home remedy recommendation section where the system suggests Ayurvedic solution based on user entered symptoms



. Fig. 13 Model Performance of Medicinal Plant Identification Model

The image shows the model performance. It shows Model Summary including Algorithm name, Dataset, Number of Classes and Key Metrics including Accuracy, Loss values

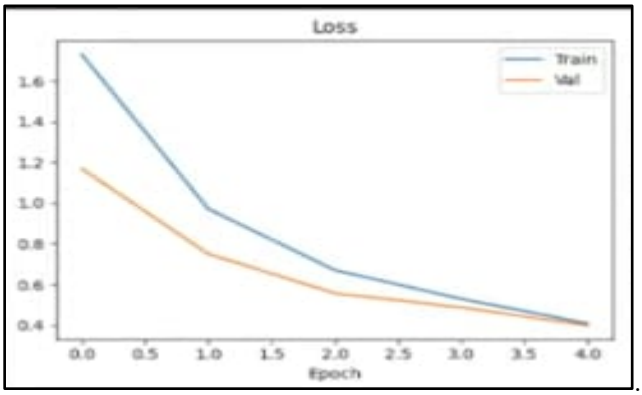


Fig. 14 graph of training and validation loss of the model

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 15 Issue 02 , February - 2026

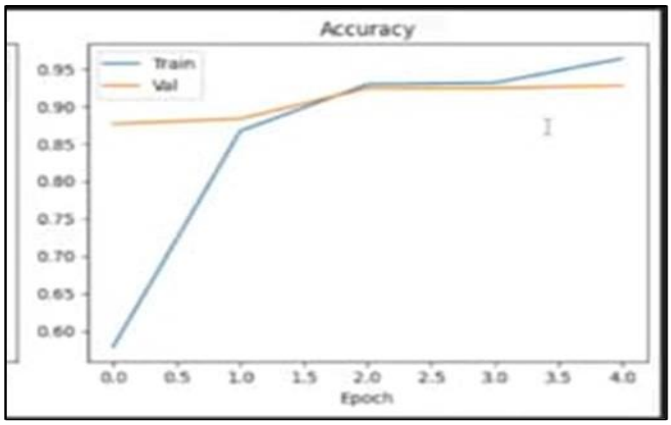


Fig. 15 shows the graph of training and validation accuracy of the model

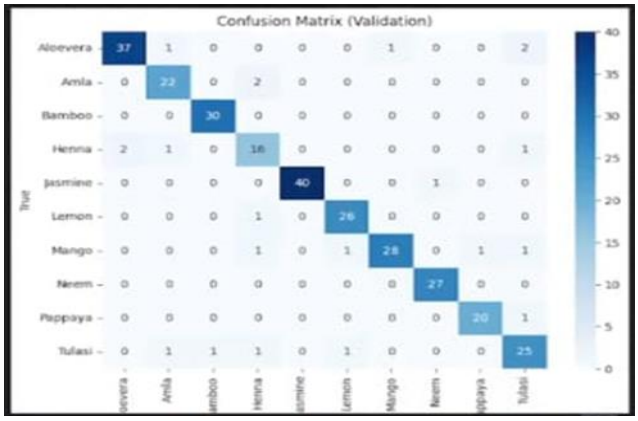


Fig. 16 Confusion matrix for medicinal plant classification and Ayurvedic remedy recommendation

VI. CONCLUSION

In an age where digital health is booming yet disconnected from traditional wisdom, this paper offers a bridge that unites AI's power with Ayurveda's legacy. The AI-Powered Medicinal Plant Identifier and Remedy System is not just a tech tool, it's a revival movement for natural healing in a digital format. By enabling users to identify plants, understand their health value, and receive symptom-based remedies through an AI chatbot, the paper nurtures a future where healthcare is intelligent, accessible, and rooted in ancient science. With thoughtful design and ethical deployment, this system can be a game-changer for holistic health on a global scale.

VII. REFERENCES

[1] A. Gopal, S. Prudhveeswar Reddy and V. Gayatri "Classification of Selected Medicinal Plants Leaf Using Image Processing " Published in 2021 International Conference on Machine Vision and Image Processing (MVIP).

[2] Umme Habiba, Md. Rasel Howlader, Md. Aminul Islam, Rahat Hossain Faisal and Md. Mostafijur Rahman"Automatic "Medicinal Plants Classification using Multi-channel Modified Local Gradient Pattern with SVM Classifier" published in Joint 2019 8th International Conference on Informatics, Electronics & Vision (ICIEV) & 3rd International Conference on Imaging, Vision & Pattern Recognition (IVPR).

[3] R. Janani, A. Gopal "Identification of selected medicinal plant leaves using image feature and ANN" published in 2019 international conference on advanced electronic systems (ICAES K. Elissa, "Title of paper if known," unpublished.

[4] Vijayashree.T, Dr. A. Gopal "Leaf Identification for the Extraction of Medicinal Qualities Using Image Processing Algorithm" published in 2020 International Conference on Intelligent Computing and Control (I2C2).

[5] D Venkataraman, Mangayarkarasi N "Support Vector Machine Based Classification of Medicinal Plants Using Leaf Features" published in 2017 International Conference on Advances in Computing, Communications and Informatics (ICACCI).

[6] Shitala Prasad, Pankaj P Singh"Medicinal Plant Leaf Information Extraction Using Deep Features" published in Proc. of the 2017 IEEE Region 10 Conference (TENCON), Malaysia, November 5-8, 2017.

[7] Dileep M.R., Pournami P.N."AyurLeaf: A Deep Learning Approach for Classification of Medicinal Plants" published in TENCON 2019 - 2019 IEEE Region 10 Conference (TENCON).

[8] C.Amudha Lingeswaran, Mr. M.Sivakumar, Dr. P.Renuga"IDENTIFICATION OF MEDICINAL PLANTS AND THEIR USAGE BY USING DEEP LEARNING" Published in Proceedings of the Third International Conference on Trends in Electronics and Informatics (ICOEI 2019) IEEE Xplore Part Number: CFP19J32-ART; ISBN: 978-1-5386-9439-8.

[9] Manojkumar P., Surya C. M., Varun P. Gopi "Identification of Ayurvedic Medicinal Plants by Image Processing of Leaf Samples" Published in 2018 Third international conference on research in computational Intelligence and communication network (ICRCICN).

[10] Amala Sabu, Sreekumar K, Rahul R Nair "Recognition of Ayurvedic Medicinal Plants from Leaves: A Computer Vision Approach" Published in 2019 Fourth International Conference on Image Information Processing (ICIIP).