

Medicinal Leaf Classifier Using MobileNetV2 and Deep Learning Techniques

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Abstract: Medicinal plants play a vital role in traditional and modern healthcare systems, yet their accurate identification remains a challenging task due to morphological similarities among species and variations in environmental conditions. This paper presents a deep learning-based system for automated classification of medicinal plants using leaf images. A dataset of medicinal plant leaves was preprocessed through resizing, normalization, and augmentation to improve model generalization. MobileNetV2, a lightweight convolutional neural network architecture, was employed as the feature extractor with additional dense layers for classification. The model was trained and validated on a structured dataset, achieving a test accuracy of over 95%. Performance was evaluated using accuracy, precision, recall, and F1-score, confirming the robustness of the system. Furthermore, the trained model was deployed via a Streamlit web application, enabling real-time predictions through an interactive interface. The proposed approach demonstrates the potential of transfer learning for efficient medicinal plant recognition, bridging the gap between research models and practical usability.

Keywords: Medicinal plants, Deep learning, MobileNetV2, Convolutional Neural Networks (CNN), Image classification, Transfer learning, Streamlit deployment, Plant identification

