AI Based Plants Detection and Classification

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Abstract*: In recent years, plant identification has gained significant importance in various fields, including agriculture, medicine, and environmental conservation. Traditionally, identifying plants requires extensive botanical knowledge and expertise, making it a challenging task for non-experts. However, with advancements in deep learning and computer vision, automated plant identification has become increasingly feasible. This project aims to develop a plant identification system using Vision Transformer (ViT), a cutting-edge deep learning model known for its exceptional image classification capabilities. The system allows users to upload images of plants and receive accurate predictions of their species while providing detailed information on each identified plant, including its scientific classification, medicinal properties, and ecological significance. The project consists of several key components: model development, where a pre-trained Vision Transformer model is fine-tuned on a specialized plant dataset; a web API that facilitates seamless interaction with the model for plant classification; an admin panel serving as a content management system to enable updates and additions of plant information; and a user-friendly, responsive web-based interface that allows easy image uploads and result visualization. Through extensive experimentation and evaluation, the proposed system aims to achieve high accuracy and reliability in plant identification, contributing to both academic research and practical applications.*

Keywords: Vision Transformer (ViT), Plant Identification, Machine Learning, Computer Vision

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