

Problem Statement:

The authors are addressed about Deep Learning for Plant Identification and Disease Classification from Leaf Images: Multi-prediction Approaches. This paper utilizes leaf images for identification and disease classification. Additionally, the authors talk about multi-prediction approaches.

Dataset used:

Three benchmark datasets Plant Village, Plant Leaves, and PlantDoc. This dataset used for both plant identification and disease classification

Methodologies Used:

The authors categorize existing DL methods into multi-model, multi-label, multi-output, and multi-task approaches, utilizing different CNN architectures such as AlexNet, VGG16, ResNet101, EfficientNet, InceptionV3, and MobileNet.

Findings and Contributions:

- InceptionV3 is a best choice for a backbone CNN in this study as it performs better than AlexNet, VGG16, ResNet101, MobileNetV2, EfficientNet, ViT, and our custom CNN.

- Using a single model for both tasks is more useful than using separate models for each of them. Single models can be more convenient, that is, easier for model selection, more memory saving, more efficient, and we also achieve better results.
- Stacking and cross-connecting prediction layers can improve the accuracy and F1-score for plant identification and disease classification. This approach is also flexible where BW can be applied to search for a better combination of the loss functions at the prediction layers.
- Transfer learning is promising. We showed that by transferring InceptionV3's weights trained on ImageNet we can improve the performance of our new model significantly.

Relevance to Project:

- Different models to identify and detect plant diseases.
- The dataset