AUTOMATED PLANT IDENTIFICATION USING ARTIFICIAL NEURAL NETWORK

Guide Name: DR.L.Sairamesh

Reg.no: 2019202013

Name: Gowri G

Course: MCA-Regular

ABSTRACT

Since there are many classifications of herbal plants, it becomes time consuming and less accurate when predicted by the non-professionals. Therefore we need proper classification algorithm to identify the herbals when the input is in abundance and the output should be more precise, In that case, we use Machine Learning for Identification and Classification of Herbal plants, In this project Artificial Neural Network Algorithms are used for classification of Herbal plants. Three main steps that are image pre-processing, feature extraction and recognition were carried out to develop the proposed system. This system can be implemented by using the MATLAB software tool. Machine learning concepts drastically decrease the time needed to arrange an exact map. In this project we will be using Artificial Neural Network (ANN) Algorithm for classification.

INTRODUCTION
MACHINE LEARNING:

Machine Learning teaches computers to do what comes naturally to humans, learn from experience. Machine learning algorithms use computational methods to learn information directly from data without replying on a predetermined equation as a model. The algorithms adaptively improve their performance as the number of samples available for learning increases.

PROBLEM STATEMENT

Plants are the backbone of life on earth, as it provides us food and oxygen. Hence, A good understanding of plants is needed to help in identifying new or rare plant species. Recognition of Plant from images is a challenging computer vision task. The various types of challenges are many parts of the plant, which need to be identified, are also diverse in nature with high intra class variations and small inter class variations.

OBJECTIVE

- To introduce plant expert determination
- To identifying plant Recognition and comparison
- To begin to identify plants using Artificial Neural Network(ANN)

ARCHITECTURE DIAGRAM
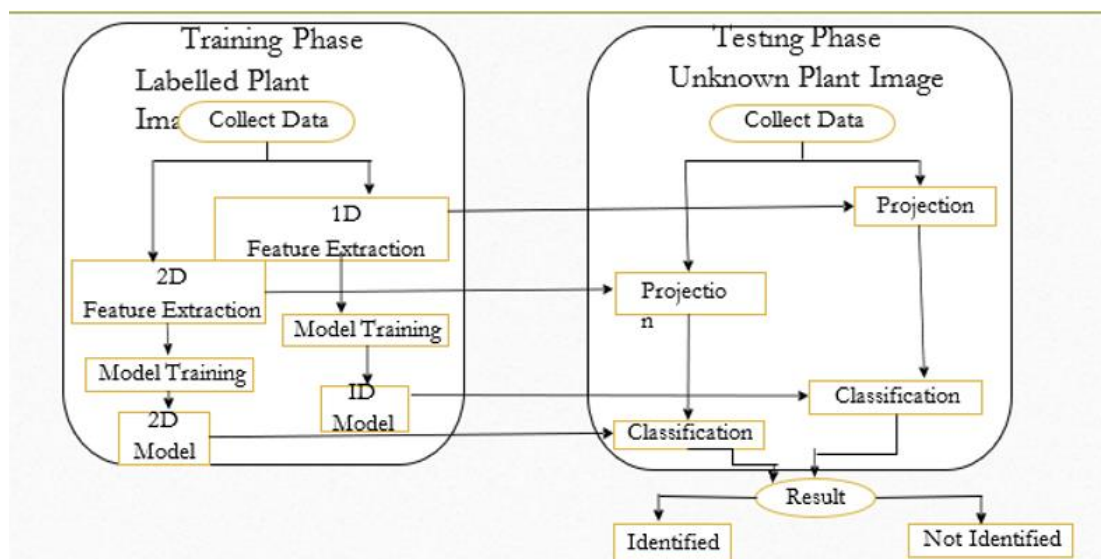
ARCHITECTURE EXPLANATION

1. To Selected leaves were cropped out and saved as new images with a standard resolution for leaf selection.
2. Initially if we upload a plant image, in Image Pre-processing it will split the image into frames.
3. Processed images from previous steps were transformed into a set of parameters that describe the leaf features.
4. By using training dataset for classification.
5. In classification process plant identifying(shape) done in the image to identify the plant.

MODULES

- Leaf Selection
- Image Pre-processing
- Feature Extraction

1. Lea Selection:

Sample images in the study consist of many plant structure. Young leaves that are evidently small sized were ignored. Selected leaves were cropped out and saved as new images with a standard resolution.

2. Image Pre-Processing:

Since all leaves are not perfectly flat, image capturing would always cast a shadow underneath the leaf. The shadow would disrupt the edge detection as it has a huge contrast with the background, confusing the algorithms to draw the boundary based on shadow instead of on the leaf.

3. Feature extraction:

Processed images from previous steps were transformed into a set of parameters that describe the leaf features. There are four classes of features extracted in this study: morphological features (shape),texture features and histogram of oriented gradients.

TECHNOLOGY

Development Platform: MATLAB IDE

Python programming language

Machine Learning Library

Intel CORE i3

8GB RAM

Windows 11(64 bit) Operating System

REFERENCES

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