**PLANT SPECIES RECOGNITION USING MORPHOLOGICAL FEATURES AND ADAPTIVE BOOSTING METHODOLOGY**

**ABSTRACT**

Plant species detection aims at the automatic identification of plants. Although a lot of aspects like leaf, flowers, fruits, seeds could contribute to the decision, but leaf features are the most significant. As a plant leaf is always more accessible as compared to other parts of the plants, it is obvious to study it for plant identification. The present paper introduced a novel plant species classifier based on the extraction of morphological features using a Multilayer Perceptron with Adaboosting. The proposed framework comprises pre-processing, feature extraction, feature selection, and classification. Initially, some pre-processing techniques are used to set up a leaf image for the feature extraction process. Various morphological features, i.e., centroids, major axis length, minor axis length, solidity, perimeter, and orientation are extracted from the digital images of various categories of leaves. Different classifiers, i.e., k-NN, Decision Tree and Multilayer perceptron are employed to test the accuracy of the algorithm. AdaBoost methodology is explored for improving the precision rate of the proposed system. Experimental results are obtained on a public dataset (FLAVIA) downloaded from http://flavia.sourceforge.net/. A precision rate of 95.42% has been achieved using the proposed machine learning classifier, which outperformed the state-of-the-art algorithms.

**INDEX TERMS**: Leaf recognition, Feature extraction, k-NN, Decision tree, Multilayer perceptron, Plant Leaf Classification, Plant Species Identification, and AdaBoost.