World Applied Sciences Journal 35 (New Advancement of Research & Development in Computer Science): 82-88, 2017
ISSN 1818-4952

DOI: 10.5829/idosi/wasj.2017.82.88

Ficusdeltoidea (Jack) Moraceae Varietal Identification Using Statistical Recognition Approach

[1]A Fakhri A. Nasir, [2]M. Nordin A. Rahman, [3]Nashriyah Mat,
[2]A. Rasid Mamat and [1]Ahmad Shahrizan Abdul Ghani

[1]Faculty of Manufacturing Engineering, Universiti Malaysia Pahang,
26600 Pekan, Pahang, Malaysia
[2]Faculty of Informatics & Computing, Universiti Sultan Zainal Abidin,
Besut Campus, 22200 Besut, Malaysia
[3]Faculty of Bioresources and Food Industry, Universiti Sultan Zainal Abidin,
Besut Campus, 22200 Besut, Malaysia

Abstract: Plant species identification is one of important application in pattern recognition. Selection of relevant features for classification is a classical problem in statistical pattern recognition and data mining. There are two main branches in solving this problem which is by using feature selection or feature extraction. Currently, in statistical plant species recognition domain, researchers focus mainly on providing an automatic system using feature extraction method such as Principal Component Analysis. This paper presents a hybrid of filter and wrapper in feature selection as well as an empirical comparison of feature selection wrapper method using Sequential Forward Selection and feature extraction method using Principal Component Analysis on a benchmark of 420 images of *Ficus deltoidea* leaf with 6 varieties. At first, the leaf images are processed using image pre-processing techniques. Then, 23 leaf features are extracted such as shape, texture and vein. Finally, in classification process, different feature selection and feature extraction techniques are computed using Support Vector Machine and Nearest Neighbor classifiers. The recognition results reveal that a combination of filter and wrapper approach in feature selection outperformed the other approaches for *F. deltoidea* varietal identification.

Key words: Plant species recognition · Statistical pattern recognition · Data mining · Feature selection

Corresponding Author: A Fakhri A. Nasir, Faculty of Manufacturing Engineering,
Universiti Malaysia Pahang, 26600 Pekan, Pahang, Malaysia.