Recognition system for leaf images based on its leaf contour and centroid

ABSTRACT

The recognition of plants is directly associated to society's life. Leaves from plants are proved to be a feasible source of information used to identify plant species. The recognition system of leaves is accomplished automatically using the experts of human being. Unfortunately, it has their loopholes that are a time consuming processes and low-effectiveness progression. The leaves classification using predictable process is quite complicated, time complexity, and as a result of using very long-termed in botanical science for non-experts that make it more irritated operation. Thus, the prompt developments in digital images, computer vision and object detection and recognition systems encourage scientists to work towards plant species recognition according to image processing technology. In this study, an image processing algorithm in order to find out the shape structure of tested plants is presented. This technique exploits the variant to scaling shift, spin technique, scaling approach, and filtering processes. The leaf contours of the same plants are computed using Support Victor Machine (SVM) where the similar sequences of the same contours usually carry the same features while the different plants sequences have different contours. In this regard, SVM classifier is exploited to be applied as a classifier to the plant's leaf. In the Experiment part, the finding was taken from Flavia dataset and it demonstrated that the suggested technique has high recognition efficiency compared to state of the art methods and is shows better quality images especially in complicated features of digital images such as ridges, edges, lines, curves and complicated contours.

Keyword: Leaf recognition; Support vector machine; Image contours; Feature extraction; Image classification