

Multi-feature vegetable recognition using machine learning approach on leaf images

ABSTRACT

Vegetables are one of the staple foods that are being consumed daily by Malaysians. With the abundance of the vegetables' type, there are a lot of lookalike vegetables which are from the same species but different type. One of the ways to distinguish the types is by looking at the leaves which are the most visible part of a vegetable. An automated vegetable recognition approach using the colour and shape features of the leaf images is being studied in this work. We focus on the vegetables that mostly consumed by Malaysian. The presented approach was tested on 300 leaf images from six different types of vegetables. Few machine learning classification techniques have been compared, and it was shown that Support Vector Machine technique is the best classifier in this work. The experiments showed that the vegetables can be recognised accurately, up to 95.7% using the Support Vector Machine when using both features were used. The study revealed that the proposed recognition approach can provide a reliable and faster way to automatically classify vegetables which are common in Malaysia.

Keyword: Colour descriptor; Malaysian vegetable recognition; Shape descriptor; Support vector machine