

Shape Characteristics Analysis for Papaya Size Classification

Slamet Riyadi, Ashrani A. Abd. Rahni, Mohd. Marzuki Mustafa, and Aini Hussain, *Member*

Abstract—Prior to export, papaya are subjected to inspection for the purpose of quality control and grading. For size grading, the fruit is weighed manually hence the practice is tedious, time consuming and labor intensive. Therefore, this paper will discuss the development of a computer vision system for papaya size grading using shape characteristic analysis. The methodology involves data acquisition to collect the images and their weights. The RGB images were converted to binary images using automatic thresholding based on the Otsu method. Some morphological procedures were involved for image enhancement to distinguish the papaya object from the background. Then the shape characteristics consisting of area, mean diameter and perimeter were extracted from the papaya images. We classified according to combinations of the three features to study the uniqueness of the extracted features. Each combination was fed separately to a neural network for training and testing. The proposed technique showed the ability to perform papaya size classification with more than 94% accuracy in this research.

Index Terms—Image processing, neural network, papaya fruit size grading, shape characteristic.