

ABSTRACT

Mapping the harvesting fruit by indentifying the total number of fruit/vegetables in trees/plants is one way that can predict the outcome before harvest, and regulate the use of fertilizers and other resources to improve results in the farming locations that have different conditions, so that farmers can manage the farm well to improve yields and profits.

There are a lot of research on the development of robots harvesting fruit that can be easily adapted to other applications. A previous study conducted in Florida at 2009 can calculate the total amount of fruit and separates the occlusion. While in 2012 in India, it can calculate the amount of fruit that has a more varied types of colors, but cannot solve the problem of occlusion (fruit of mutually coincident).

In this research, the method will be developed to calculate the number of round-shaped fruit using transformation of CIELAB color space and perimeter-based detection that can automatically segmented region and separate fruit that counted into single pieces because of the occlusion. The amount of tested image is 34 images which are divided into two categories: simple and complex. The system that built using pieces of perimeter initial processing rules and minimum distance of classification is $\frac{1}{4}$ of radius is obtained by 89,04%.

Keyword: *counting round fruit, transformation of CIELAB color space, occlusion, perimeter-based detection*