ABSTRACT

Orange is one of fruit that has the largest number of varieties. Because of that many varieties, people are often getting confused to determine the variety and ripeness because every variety of orange has different characteristic. Some of that characteristic are shape, size and color. As well as the variety, the ripeness is also has different characteristic in size and color for each variety. For example is between Bali orange and Ponkam orange. When the size of Bali orange is equal to Ponkam orange, The ponkam orange is riped well but the bali orange isn't.

In this final project, a system that can determine the variety and ripeness of orange fruit with digital image processing is built. This system is using a webcam that is placed right in front of the object to acquire image of the object. First, the shape pattern of orange will be determined. The pattern will be compared with reference patterns in database to determine variety of the orange. The ripeness of the orange is based on the size or color. In some varieties, the color difference is easier to see than the size difference and vice versa. Orange ripeness based on color is determined by comparing the mean of layer red, green and blue with threshold. Meanwhile the ripeness based on size is determined by comparing the number of pixels which have value 1 with threshold. This system is built with Matlab R2008a and the system work in realtime.

As the result of the experiment, the system has 91.67% accuracy of variety classification and 90% accuracy of ripeness classification. The computation time of the system is 0.2708 seconds.

Keyword: Digital image processing, realtime, orange, ripeness.