

ABSTRACT

Cacao or Theobroma cacao L is the main ingredient in making cocoa powder, which will be used to make chocolate. There are three types of cacao that are criollo, forastero and trinitario. In this final project, trinitario type cacao is used, which is the most dominant type of cacao cultivated in Indonesia because of the good quality of its seeds and its resistance to diseases.

In this final project, a system that can classify the ripeness level of cacao pods based on the color and size of the fruit is created. To support this system, researchers conducted cacao image processing using the Discrete Cosine Transform method for identification and the K-Nearest Neighbor method for classification.

The system uses 90 sample images as training data stored in a database and 18 test images that are not stored in a database that will be used as test images. From the results of system testing, the highest accuracy obtained for the classification of the maturity of cocoa is 83.33% and computing time 21.13 seconds. This result is obtained by using some parameters, that is 512×512 pixels as image resize, 512 as DCT blocks, mean as the statistical feature of DCT, parameter $k = 1$, and Euclidean as the distance type in K-NN.

Keywords: Discrete Cosine Transform, K-Nearest neighbor, Cacao