

ABSTRACT

Cow's milk is one of the most popular healthy drinks to be consumed every day by the people in Indonesia and in the whole of world since it has a really good benefits and a good nutritional value for health. The increasing of people needs for cow's milk makes a lot of the producer of cow's milk cheating in the production process. One of the cheats which is often done by the producer is by adding excess water to the cow's milk so that the volume of it becomes higher. Such cheats surely makes the cow's milk is not entirely pure and fresh. The simple way to know the purity of the cow's milk is by seeing the viscosity of the milk, however that way is not so accurate and hard to differentiate if the cow's milk is already mixed by the fruit flavor and food coloring. Therefore, tools program for detecting the purity and freshness of the cow's milk is needed in order to know the level of the freshness of the cow's milk by detecting the color, shape and the texture of the cow's milk.

In this final project, simulation and analysis detection the quality and the freshness of cow's milk through digital image processing based on Content-based Image Retrieval (CBIR) method by using MATLAB software will be done. In order to do the simulation with MATLAB software, firstly take the cow's milk sample image based on the difference of water mixture so it is going to generate the characteristic from every milk mixture. Then, the sample image will be compared with the other sample image to obtain the similarity. From that similarities, the sample will be indexed and retrieved. So it will get the sequence of the freshness of the cow's milk from every specified time stages.

The result of this final project were get the classification of quality and freshness of cow's milk applied to MATLAB software. The freshness and quality of cow's milk is distinguished by the shape and texture that have been obtained from the sample image processing using decision tree classification, the highest accuracy reaches 97.5% with a computation time of 1.4244 seconds.

Keyword : *Cow's milk, CBIR, shape similiarity, decision tree*