

ABSTRACT

Indonesian people commonly consume chicken egg as an ingredient. Not only cheap, but egg also has a high-quality protein and a complete composition of essential amino acids. Therefore, many people use an egg as ingredients to make some foods, such as bread and pizza. However, eggs have a different quality and freshness in each farm. The quality and freshness can be seen by the height of albumen/egg white. While to detect the quality of yolk, we can see from the color of yolk itself. The higher the albumen level, the more freshness the egg can be. Yolk color has a level of 1 to 15. And typically for determining the color of yolk, we use a tool called Yolk Color Fan. However, to match the color of the yolk by using Yolk Color Fan with naked eye, the results would be subjective so there will be differences in any perspectives caused by several factors such as light and differences in visual abilities of a person.

In this final project, the author discusses how to detect the quality and the freshness from the albumen and to detect the quality of yolk from the color of chicken egg yolk. There are several methods that can be used to detect the quality and freshness of the yolk. In this final project the author uses Fuzzy Color Histogram (FCH), Histogram Equalization and edge detection with K-Nearest Neighbor (K-NN) classification method, which begins with the preprocessing consisting of cropping, resizing, RGB to grayscale, RGB to CMYK, RGB to HSV, otsu, Strel (Disk-12), threshold, erosion, filling, edge detection and distance detection.

The results of this final project are obtained 76% accuracy of the yolk quality detection with computing time 5.707324s seconds, and 65% accuracy of quality and freshness detection of chicken egg. With this system capabilities, the author expect that it can help Yolk Color Fan user well. Thus, it can be used as a proper standard of accuracy in measuring the quality of the yolk and the quality and freshness of negeri chicken eggs.

Keyword: Histogram Equalization, Fuzzy Color Histogram (FCH), K-Nearest Neighbor (K-NN)