

ABSTRACT

Kale vegetables can be classified as leafy vegetables that have many health benefits and are easy to obtain. But there are bad things that can happen, if the kale vegetables are not fresh and are exposed to chemicals. The effects of vegetables that are exposed to chemicals and which are damaged, such as stomach cramps, diarrhea, fever, chills, nausea, vomiting, dizziness, fatigue, weakness, even worse effects result in disorders such as dementia, Parkinson's disease, in the long term, disturbing male fertility and can cause cancer.

Therefore, this final project is designed to produce a quality classification process and detect if exposed to chemicals in kale vegetables. The data used is the result of taking kale vegetables on the leaves which will be managed with digital images. The data will be shared based on training data and test data. The system uses the Gray Level Co-occurrence Matrix (GLCM) method to extract features from processed data using digital images and the K-Nearest Neighbor method to classify data.

This final project was carried out with two experiments which resulted in a system to classify freshness and detect chemical exposure based on 3 types, namely fresh kale vegetables that were not exposed to chemicals, water spinach with a mild pesticide content and water spinach with excessive pesticide. The first experiment of this system has an accuracy of 42.85% with a value of $k = 1$ at the angle of 0° , 45° , 90° , 135° . Experiments of these two systems have an accuracy of 100% with a value of $k = 1$ at angles of 0° , 45° , 90° , 135° . There are many classification errors in the first experiment because the characteristic value of the training image is less dominant with the characteristic value of the test image and there are imperfect test data.

Keywords: : Kale, Gray Level Co-Occurrence Matrix, K-Nearest Neighbor, Matlab