ABSTRACT

Hydroponics is a farming technique where the planting medium does not use soil, the type of plant that is usually planted is a type of vegetable. This hydroponic technique is used because it does not require a large enough area to make it. In monitoring the growth of hydroponic vegetables still rely on humans, so it requires time for routine monitoring directly. From this problem came the idea of creating a detection system for many Pakcoy hydroponic vegetable leaves to monitoring the condition of hydroponic vegetables.

Image Processing is a branch of digital image processing. Currently the development of technology is so fast, that image processing is not only to improve the image, but can detect an object, measure an object, and others. In doing image processing there are several stages, namely, acquiring images, preprocessing, conducting training data, feature extraction, and classification.

The method used in this system is the R-CNN (Region-based Convolutional Neural Networks) method. This research count leaves of pakcoy hydroponic using the R-CNN method obtained an accuracy of 86% with a system speed of 14.08 sec, partitioning data 10% testing data and 90% training data with a learning rate of 0,0002, epoch 6569, using an angle of 0 ° and a distance of 35 cm from Pakcoy vegetables to the webcam.

***Keywords**: Hydroponics, monitoring the condition, count leaves, computer vision, R-CNN, deep learning.*