

ABSTRACT

With the rapid technology development, the computing capabilities of a computer becomes more sophisticated. Nowadays, the popular technology development is Artificial Intelligence (AI). One branch of Artificial Intelligence (AI) is a *deep learning* which is part of machine learning that is able to do deeper learning so that deep learning becomes the main brain in Artificial Intelligence (AI) development and can be used for object detection. The research development on deep learning architecture for object detection is needed to produce an architecture that is able to detect objects faster and is equipped with a more efficient detection sistem.

The *Faster* R-CNN is a technique that utilizes a convolutional neural network (CCN) which is a type of neural network commonly used in image data. Faster R-CNN is an object detection method that is able to detect an object captured by the camera which will be stored in a database or not, so the computer can infer the tracked object. Moreover, *Faster* R-CNN uses region proposal network (RPN) a neural network that can replace the role of selective search in reducing the excessive computing needs of a computer and produce *Faster* performance in detecting an object based on deep learning.

this final project designs a sistem that can detect an object from several palm gestures by using Faster-RCNN. The pre-trained CNN used is RestNet 50. The result in this research can be higher than 90 Hence, the writer expects that this study can obtain an accuracy rate which is exceeding 90% with hyperparameter learning rate, batch size and step training.

Keywords: *Artificial Intelligence* (AI), Object detection, *Deep Learning*, *Faster R-CNN*, *Convolutional Neural network* (CCN).