ABSTRACT

Unmanned Aerial Vehicles (UAV) are equipped with cameras and can take high-resolution images. In previous studies, various models were trained to detect objects in UAV images. These various models consume high computational load when retrained using UAV imagery, but if the model is not retrained, it returns poor performance. The EfficientDet object recognition model is computationally lighter. Therefore, the author wanted to examine the exploitation of the EfficientDet low computational load object recognition model on UAV images.

In this thesis, an object detection system on UAV imagery is trained and designed to detect 10 classes object using the D0 version of the EfficientDet model. After the data is obtained then preprocessing then carried out in the form of annotation conversion. Next, model training process being carried out several times. In each training, the model was tested so as to produce a validation value. The last validation value was analyzed as a benchmark for performance.

This thesis uses the VisDrone dataset consisting of 6471 images as training data and 548 images of test data with 960×540 pixels resolution. In this thesis, large area average precision (AP) value, AP IoU value 0.5, 0.75, and average recall (AR) with maximum detection of 1, 10, and 100 will be benchmarks indicating model performance. As a result, EfficientDet d0 model surpassed TridentNet model according to latest research with ARmax1 value of 2.1%.

Key Word : *EfficientDet*, UAV Images, Low Computing Cost.