

ABSTRACT

With the advancement of time, many aspects of human life are developing, one of which is the field of animal husbandry which is currently getting larger, and with the increasing size of farms, a livestock monitoring system is now needed to monitor cattles that are not in their cage, such task is expected to be achieved by using YOLOv5 on images taken by drones.

YOLOv5 is an object detection model used to detect cows on farms through images taken by drones or UAVs, to achieve this detection capability, training is carried out using a dataset of cow images and also changing the hyperparameter configuration in the algorithm to get optimal detection results. The dataset used in this training is 3131 cow images and 836 non-cow images. The most optimal hyperparameter configuration obtained is batch 32, learning rate 0.01, and epoch 350 with the results of precision 0.943, Recall 0.925, and mAP 0.831.

From the accuracy obtained at five meters and drone not moving is 75%, height of ten meters has an average accuracy of 69.1% and 15 meters with an average accuracy of 47.2%. In the condition of the drone moving at the speed of 0.1 m/s the accuracy results obtained are 75% for five meters, 0% for ten meters and 25% for 15 meters.

Keywords: *YOLO, YOLOv5, Object detection, Training, Hyperparameter, Drone, Dataset*