Cats and Dogs Classifier

Data annotation:

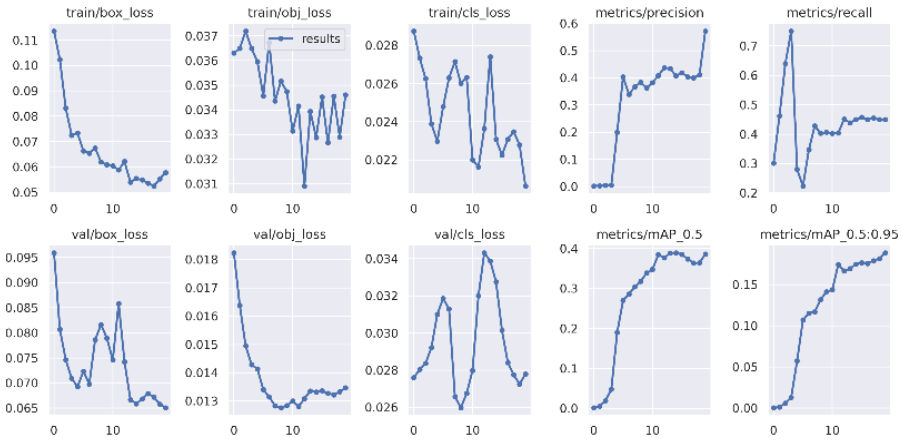
For annotating the given dataset I used roboflow. Roboflow allows us to annotate and apply augmentations to the dataset. In this case, I resized all the images to (640x640) and applied blurring to some of the images to create more data points. Finally, I exported the images and labels according to yolo format.

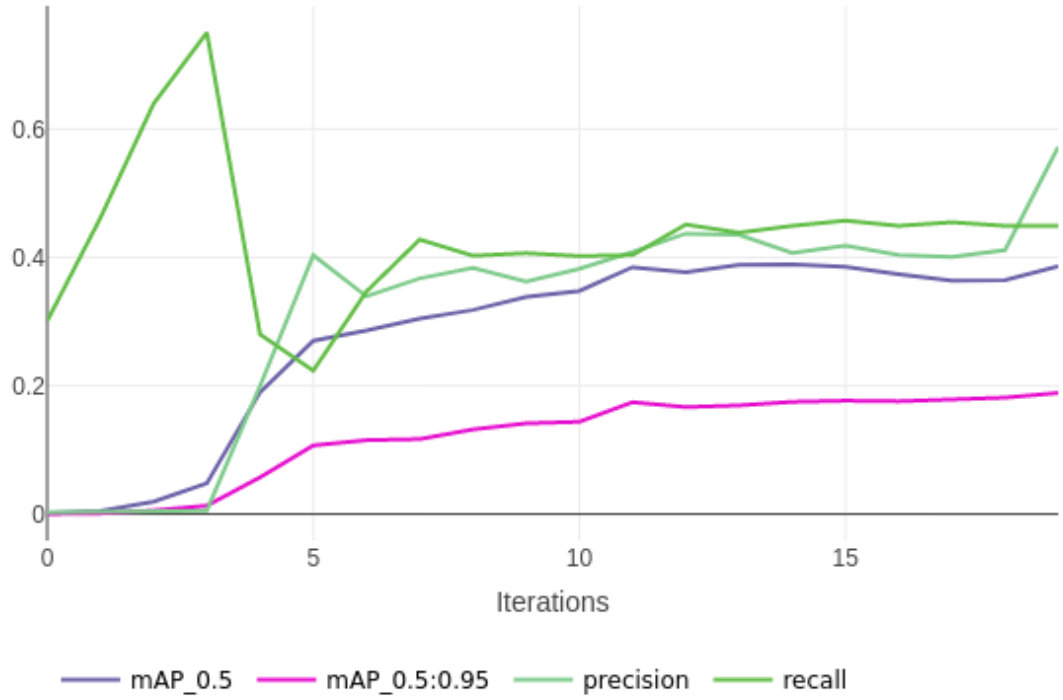
Training:

For the classification task I choose yolov5 as the model. I trained 2 models yolov5s and yolov5m. To monitor the training steps I used ClearML for visualization. In total, I did 4 experiments.

1. 24 layers frozen(v5s):

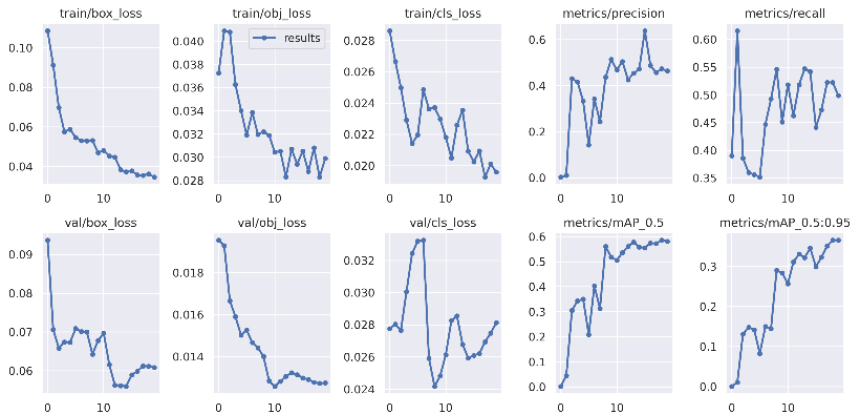
For the 1st experiment, I used Yolov5s with all layers except the classification and bbox layer frozen. This model performed the worst and had the lowest precision and recall.

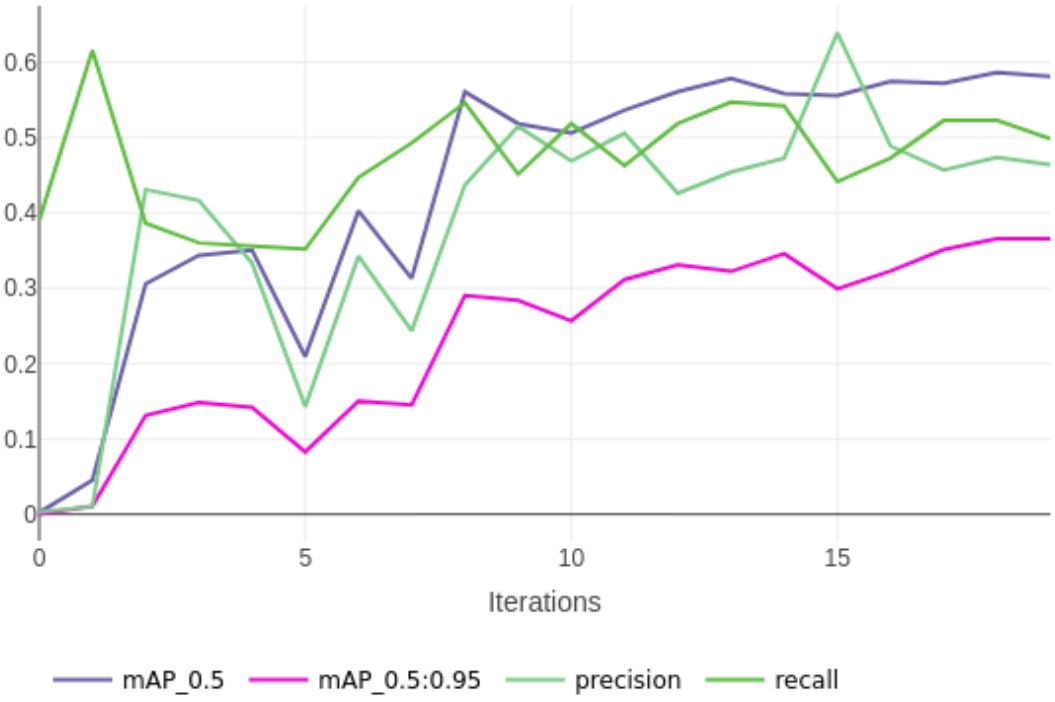




2. 10 layers frozen(v5s):

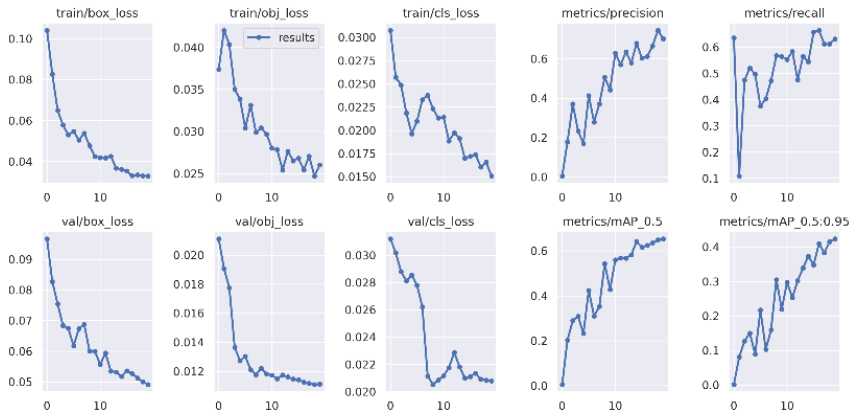
This configuration had a much better mAP.

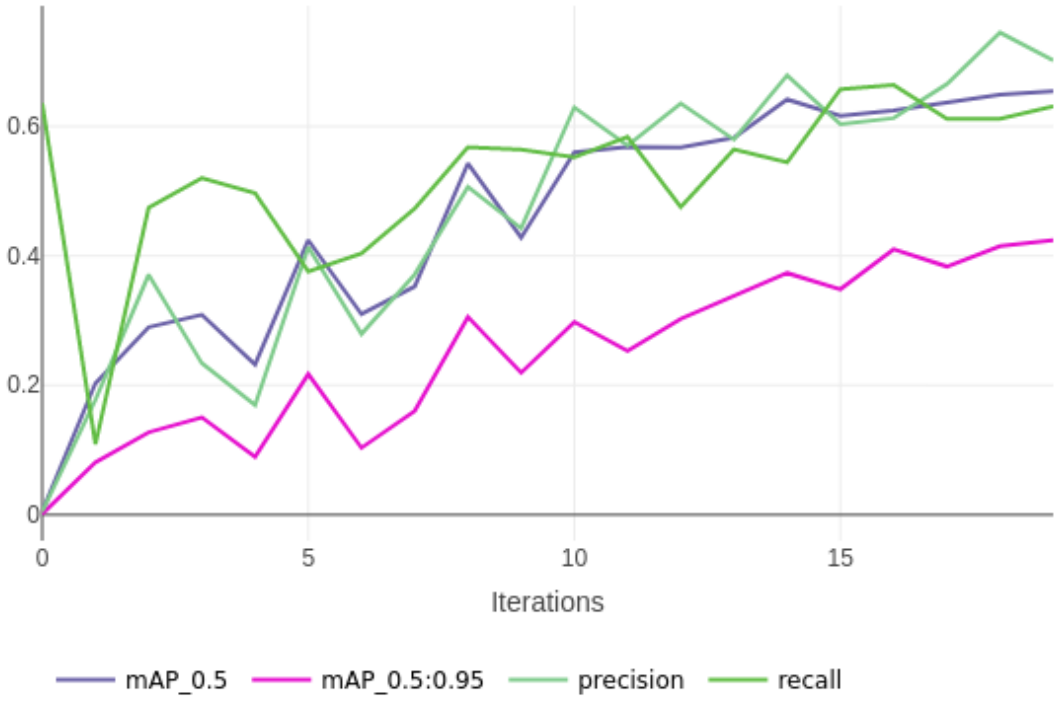




3. 10 layers frozen(v5m):

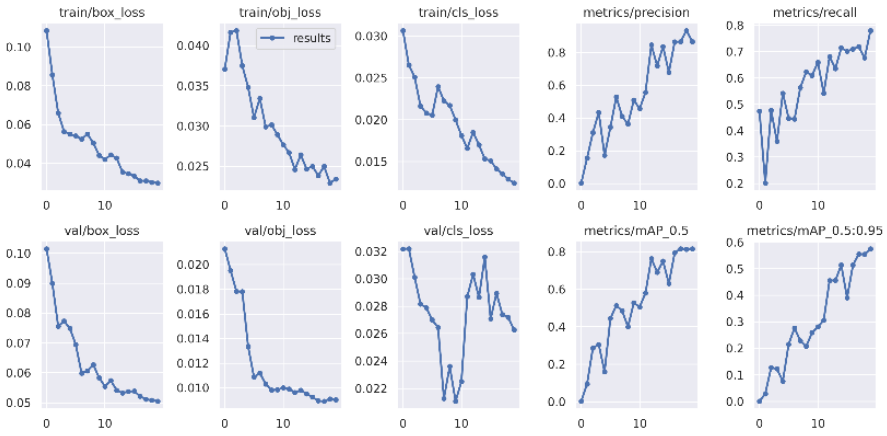
This model performed significantly better than both the previous models.

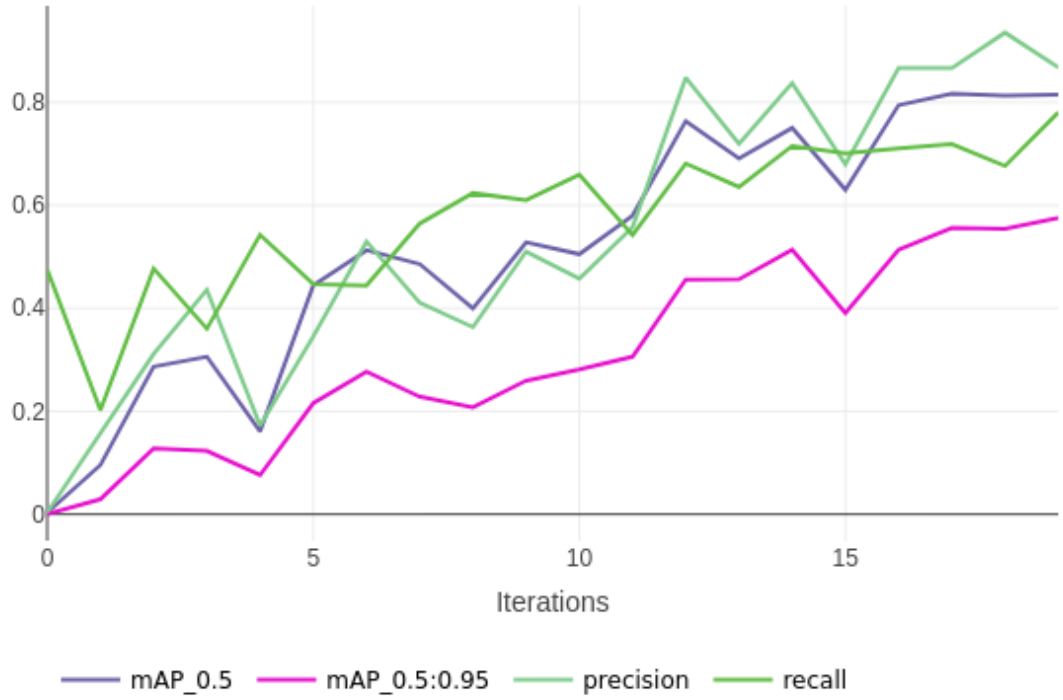




4. 0 layers frozen(v5m):

This was the best performing model.





Overall it can be seen that freezing layers is decreasing model performance.