CSC8637 – Deep Learning

Task 2 – Bird classification

I approached the bird classification task in a way to achieve the maximum accuracy I can with the dataset. I designed my code with TensorFlow and keras and I used VGG16 pretrained weights from ImageNet. I used pre-process image flow from directory method to process the image from the structure of the directory itself. Shuffle = True will shuffle the images in order every time we try to run the code. Then I used prefetch for parallel processing which will decrease the run time.

To process the images with data augmentation, I used random flip and random rotation to my model before vgg16 trained weights. Then, I used global average pooling and dropout to increase the efficiency along with two dense layers of 4096 units. I tweaked optimizer 'Adam' a little with changing the learning rate to 0.00001 which gives better result compared to the original 0.001 learning rate. I saved the best model checkpoint to the folder 'models' and the metrices included with accuracy, precision and recall.

With the fit value, the graphs with accuracy and loss are plotted. With the evaluate value, I can identify the accuracy, precision, and recall values of my model with the test set. With the predict value, I plotted a confusion matrix in which yellow denotes the values of true positives and false negatives where the black denotes the values of true negatives and false positives.

Below are the tables which shows the accuracy, precision and recall of the test set.

Accuracy	0.9680
Loss	0.1288
Precision	0.9740
Recall	0.96

Confusion Matrix: