Labsheet 4 Answers

7. In the below given cell, shape of the boxes.eval() is (1783,4). Why are there 1783 boxes? Explain the reason for it. What is the maximum number and minimum number you can get for that? Write these answers in a word file.

* The shape (1783, 4) of the boxes.eval() array indicates that 1,783 bounding boxes met the confidence threshold after applying the yolo\_filter\_boxes function in the YOLO object detection model. Originally, the model predicts 1,805 bounding boxes (from a 19x19 grid with 5 boxes per cell), but only 1,783 had confidence scores above the threshold, resulting in these remaining boxes. The maximum possible number of boxes would be 1,805 if all predictions met the threshold, while the minimum could be 0 if none did.

8.yolo\_anchors.txt contains 10 values. They can be considered as height and width of 5 anchor boxes. What is the advantage of using such anchor boxes? What was the method used to determine the sizes of these anchor boxes?

* Anchor boxes in object detection algorithms like YOLO, improve the detection of objects with varying sizes and aspect ratios, enable faster training convergence, and enhance the model's ability to handle small and elongated objects. By providing predefined dimensions, anchor boxes reduce computational complexity and increase recall. They also improve performance in scenarios with dense object placement and offer better initial estimates for object localization. These predefined boxes serve as starting points that the model can adjust, significantly boosting the efficiency and accuracy of object detection tasks across diverse image contents.