IT21003332 – Lab 04

7. There are 1783 boxes coming from the output of the yolo\_filter\_boxes function which is used in yolo object detection models. This filters out boxes based on their confidence score. Retaining the ones with higher thresholds.

It currently predicts bounding boxes in a 19x19 grid.

The maximum number of bounding boxes could be 1805 (19x19x5). Minimum would be zero if the filtered out by none of the bounding boxes meeting the confidence.

Increasing the threshold means, few are more strict on choosing lesser bounding boxes.

Higher stddev: Standard deviation would leave some margin for the bounding boxes to be accepted. Depending on the level of standard deviation we offer.

Decreasing the stddev would make the confidence score more consistent but leave less margin for filtering in bounding boxes.

Decreased stddev gave lesser bounding boxes.

Higher stddev reached closed to the maximum bounding boxes.

8. **Advantages:**

* **Efficiency**: Anchor boxes allow the model to predict bounding boxes more efficiently by simplifying the prediction task.
* **Handling Multiple Object Sizes**: They enable the model to detect objects of various sizes and aspect ratios, improving accuracy.
* **Better Localization**: Anchor boxes provide a reference for bounding box predictions, enhancing localization accuracy.

**Method:** using the k-means clustering algorithm on the training dataset's bounding box dimensions.



