! **Try again once you are ready**
TO PASS 80% or higher

Try again

GRADE
57.29%

Object Detection

LATEST SUBMISSION GRADE
57.29%

1. Check all the techniques that can be used to improve the accuracy of detecting objects and encapsulating them entirely within a single bounding box. **0.667 / 1 point**

- [x] Use Selective Search technique

✓ **Correct**
Correct! It is an advanced technique, and faster than a naive approach.

- [x] Increase the size of the bounding box until the object fits entirely in it.

✓ **Correct**
Correct! That is one of the simplest techniques.

- [x] Scale down the image and then detect the object within it using the bounding box

! **This should not be selected**
Incorrect! The scaling down technique is used to save on memory as we have less pixels (as opposed to a larger image) to process.

2. Check all that are true for *Selective Search*. **0.667 / 1 point**

- [ ] It tries to identify larger objects by grouping together initially identified smaller objects.
- [ ] The biggest bounding box detected of the smaller objects in the end becomes the final bounding box around the identified object.
- [x] Image segmentation is used in this technique

✓ **Correct**
Correct! It is used to identify smaller objects.

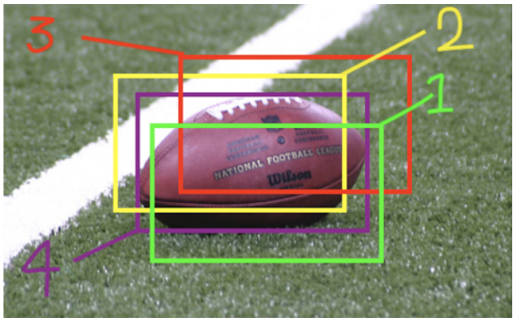
You didn't select all the correct answers

3. The technique of selecting the best bounding box based on the highest intersection over union (IOU) between the true label and several predicted bounding boxes is called non-maximum _____ (NMS). (Hint: it is a one word answer) **1 / 1 point**

suppression

✓ **Correct**
Correct!

4. Consider the following image, according to the NMS technique which coloured bounding box will be eventually selected as the best bounding box around the football? **1 / 1 point**



- ( ) Yellow (# 2)

- Green (# 1)
- Purple (# 4)
- Red (# 3)

Correct
Correct! As this bounding box encapsulates the maximum area of the object.

5. One of the differences between R-CNN and Fast R-CNN is that, *Fast R-CNN proposes regions of interest to the input image (generates), whereas in R-CNN regions of interest are expected to be an input (as opposed to generating them) to the model.* **0 / 1 point**

- False
- True

Incorrect
Incorrect! R-CNN generates regions of interest to the input image, whereas in Fast R-CNN regions of interest are an input (as opposed to generating them).

6. Consider the following code and check all that are true. **0.25 / 1 point**

```
viz_utils.visualize_boxes_and_labels_on_image_array(
      image_np_with_detections[0],
      result['detection_boxes'][0],
      (result['detection_classes'][0] + label_id_offset).astype(int),
      result['detection_scores'][0],
      category_index,
      use_normalized_coordinates=True,
      min_score_thresh=.40,
      )
```

- [ ] *min_score_thresh* is used to leave out object labels and their bounding boxes if their score falls below the set threshold.
- [x] Setting *use_normalized_coordinates=True* indicates that your bounding box coordinates are not normalized, so you want them to be normalized.

This should not be selected
Incorrect! By setting this you're indicating that your coordinates are already normalized, so the function will know that it should denormalize them for the visualization.

- [ ] *label_id_offset* is an adjustment in case the 'detection classes' starting index and actual starting index have an offset between them.
- [ ] *image_np_with_detections[0]* is a numpy array containing the image, and 0 index shows there are multiple input images being passed to this function.

7. The following code initializes a model and restores pre-trained weights, *detection_model,* using the .config file method **0 / 1 point**

```
configs = config_util.get_configs_from_pipeline_file("xyz.config")

model_config = configs['model']
model_config.ssd.num_classes = num_classes
model_config.ssd.freeze_batchnorm = True

detection_model = model_builder.build(
      model_config=model_config, is_training=True)
```

- False
- True

Incorrect
Incorrect! The code here only initializes a new model architecture with "empty" weights and does not restore pre-trained weights.

8. Which of the following is the correct syntax to print a list of your trainable variables in a model ? **1 / 1 point**

- *for varName in myModel.trainable_variables:*

  print(varName.name)

- *for varName in myModel.trainables:*

  print(varName.name)
- *for varName in myModel.Variables:*

  print(varName.name)
- *for varName in myModel.trainableVariables:*

  print(varName.name)

Correct
Correct!