Congratulations! You passed!
TO PASS 80% or higher

Keep Learning

GRADE
85.41%

Object Detection

LATEST SUBMISSION GRADE
85.41%

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. **1 / 1 point**

- [ ] Scale down the image and then detect the object within it using the bounding box
- [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] Use Selective Search technique

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

2. Check all that are true for *Selective Search*. **0.333 / 1 point**

- [x] Image segmentation is used in this technique

Correct
Correct! It is used to identify smaller objects.

- [x] The biggest bounding box detected of the smaller objects in the end becomes the final bounding box around the identified object.

This should not be selected
Incorrect! The bounding box of the smaller objects are merged to form the bounding box around the identified object.

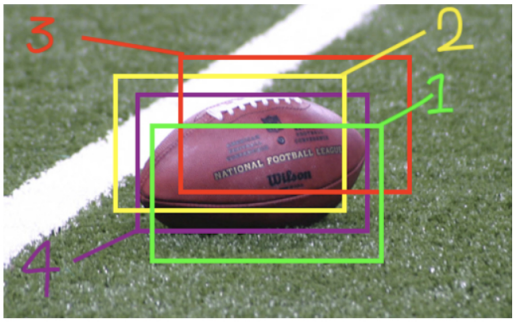
- [ ] It tries to identify larger objects by grouping together initially identified smaller objects.

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**



- (•) Purple (# 4)
- ( ) Yellow (# 2)
- ( ) Green (# 1)

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.* **1 / 1 point**

False

True

Correct
Correct! 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. **0.5 / 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,
      )
```

label_id_offset is an adjustment in case the 'detection classes' starting index and actual starting index have an offset between them.

Correct
Correct!

Setting *use_normalized_coordinates=True* indicates that your bounding box coordinates are not normalized, so you want them to be normalized.

min_score_thresh is used to leave out object labels and their bounding boxes if their score falls below the set threshold.

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.

This should not be selected
Incorrect! "0" index shows it is a single image.

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

True

False

Correct
Correct! 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.Variables:

print(varName.name)

- *for varName in myModel.trainableVariables:*

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

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

  print(varName.name)

Correct
Correct!