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Graded Assignment • 30 min

English ⌄ **Due** Jun 15, 11:59 PM PDT

Your grade: 100%

Your latest: **100%** • Your highest: **100%** • To pass you need at least 80%. We keep your highest score.

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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**

☑ Increase the size of the bounding box until the object fits entirely in it.

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

☑ Use Selective Search technique

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

☐ Scale down the image and then detect the object within it using the bounding box

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

☑ Image segmentation is used in this technique

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

☐ The biggest bounding box detected of the smaller objects in the end becomes the final bounding box around the identified object.

☑ It tries to identify larger objects by grouping together initially identified smaller objects.

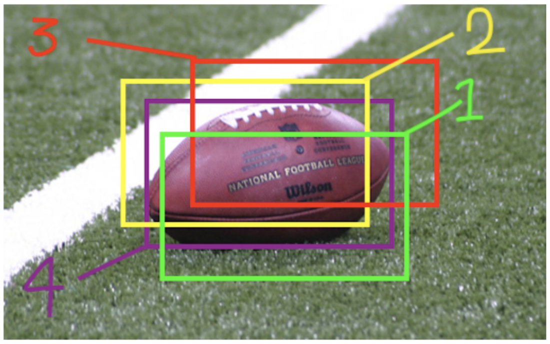
✓ **Correct**
Correct!

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**



○ Green (# 1)

○ Yellow (# 2)

● Purple (# 4)

○ Red (# 3)

✓ Correct

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

○ True

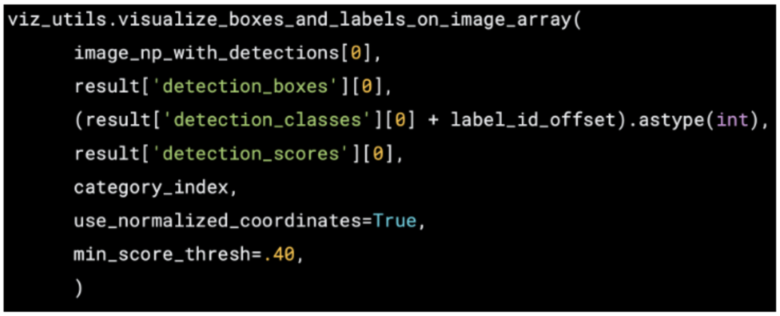
● False

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.

1 / 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,
      )
```

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

□ *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.

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

Correct

Correct!

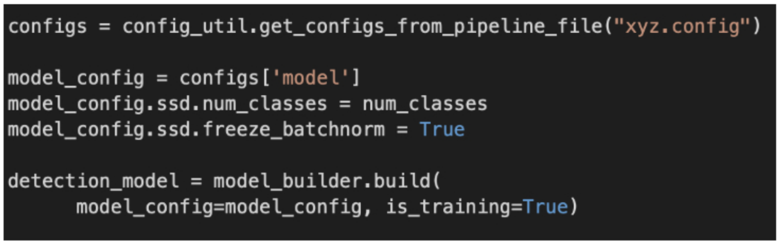
☑ *label_id_offset*is an adjustment in case the 'detection classes' starting index and actual starting index have an offset between them.

Correct

Correct!

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)
```

● False

○ True

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.trainables:*

print(varName.name)

○ *for varName in myModel.trainableVariables:*

print(varName.name)

● *for varName in myModel.trainable_variables:*

print(varName.name)

○ *for varName in myModel.Variables:*

print(varName.name)

✓ **Correct**

Correct!