Congratulations! You passed!

Grade received 80% **Latest Submission Grade** 80% **To pass** 80% or higher

Retake the assignment in **23h 15m**

Go to next item

1. You are building a 3-class object classification and localization algorithm. The classes are: pedestrian (c=1), car (c=2), motorcycle (c=3). What should y be for the image below? Remember that "?" means "don't care", which means that the neural network loss function won't care what the neural network gives for that component of the output. Recall $y = [p_c, b_x, b_y, b_h, b_w, c_1, c_2, c_3]$.

1 / 1 point

https://www.pexels.com/es-es/foto/mujer-vestida-con-falda-azul-y-blanca-caminando-cerca-de-la-hierba-verde-durante-el-dia-144474/

- (selected) $y = [1, 0.66, 0.5, 0.75, 0.16, 1, 0, 0]$
- $y = [1, 0.66, 0.5, 0.16, 0.75, 1, 0, 0]$
- $y = [1, ?, ?, ?, ?, 1, ?, ?]$
- y = [1, 0.66, 0.5, 0.75, 0.16, 0, 0, 0]

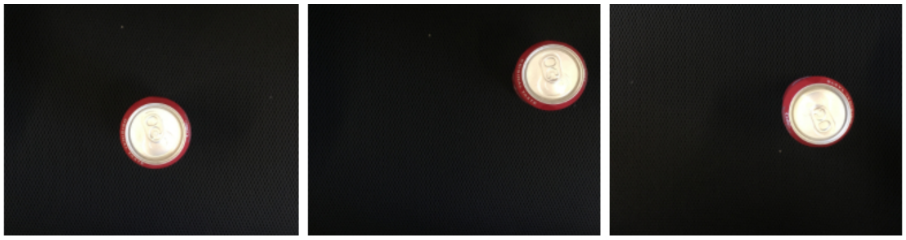
Expand

Correct
Correct. $$p_c = 1$$ since there is a pedestrian in the picture. We can see that $$b_x,b_y$$ as percentages of the image are approximately correct as well $$b_h, b_w$$, and the value of $$c_1 = 1$$ for a pedestrian.

2. You are working on a factory automation task. Your system will see a can of soft-drink coming down a conveyor belt, and you want it to take a picture and decide whether (i) there is a soft-drink can in the image, and if so (ii) its bounding box. Since the soft-drink can is round, the bounding box is always square, and the soft drink can always appear the same size in the image. There is at most one soft drink can in each image. Here're some typical images in your training set:

1 / 1 point



To solve this task it is necessary to divide the task into two: 1. Construct a system to detect if a can is present or not. 2. Construct a system that calculates the bounding box of the can when present. Which one of the following do you agree with the most?

- An end-to-end solution is always superior to a two-step system.
- The two-step system is always a better option compared to an end-to-end solution.
- We can approach the task as an image classification with a localization problem.
- We can't solve the task as an image classification with a localization problem since all the bounding boxes have the same dimensions.

Expand

Correct
Correct. We can use a network to combine the two tasks similar to that described in the lectures.

3. When building a neural network that inputs a picture of a person's face and outputs N landmarks on the face (assume that the input image contains exactly one face), which is true about $\hat{y}^{(i)}$? **1 / 1 point**

- $\hat{y}^{(i)}$ stores the probability that a landmark is in a given position over the face.
- $\hat{y}^{(i)}$ has shape (2N, 1)
- $\hat{y}^{(i)}$ has shape (1, 2N)
- $\hat{y}^{(i)}$ has shape (N, 1)

Expand

Correct
Correct. Since we have two coordinates (x,y) for each landmark we have N of them.

4. You are working to create an object detection system, like the ones described in the lectures, to locate cats in a room. To have more data with which to train, you search on the internet and find a large number of cat photos. **1 / 1 point**

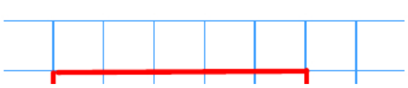
Which of the following is true about the system?

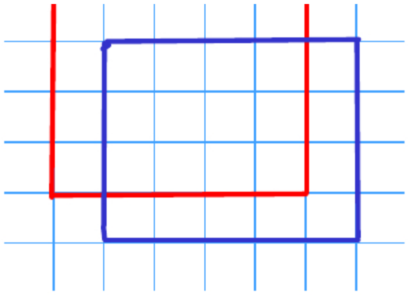
- We should use the internet images in the dev and test set since we don't have bounding boxes.
- We can't add the internet images unless they have bounding boxes.
- We can't use internet images because it changes the distribution of the dataset.
- We should add the internet images (without the presence of bounding boxes in them) to the train set.

Expand

Correct
Correct. As this is a localization model, we also need the coordinates of the bounding boxes, not just the images.

5. What is the IoU between the red box and the blue box in the following figure? Assume that all the squares have the same measurements. **0 / 1 point**





- ( ) $\frac{2}{5}$
- ( ) $\frac{1}{2}$
- ( ) $\frac{4}{5}$
- ( ) $\frac{3}{-}$

Expand

Incorrect
Recall that IoU is calculated as the quotient of the area of the intersection over the area of the union, and that the area of the union is not the sum of the areas.

6. Suppose you run non-max suppression on the predicted boxes below. The parameters you use for non-max suppression are that boxes with probability ≤ 0.4 are discarded, and the IoU threshold for deciding if two boxes overlap is 0.5. How many boxes will remain after non-max suppression?

0 / 1 point

- ( ) 3
- ( ) 5
- ( ) 7
- ( ) 6
- ( ) 4

Expand

Incorrect
No, try to go over the algorithm step by step. First remove all boxes with probabilities lower than the probability threshold. Then, go over the non-max suppression algorithm to remove some of the overlapping boxes.

7. If we use anchor boxes in YOLO we no longer need the coordinates of the bounding box b_x, b_y, b_h, b_w since they are given by the cell position of the grid and the anchor box selection. True/False?

1 / 1 point

- ○ True
- ◉ False

Expand

Correct
Correct. We use the grid and anchor boxes to improve the capabilities of the algorithm to localize and detect objects, for example, two different objects that intersect, but we still use the bounding box coordinates.

8. What is Semantic Segmentation?

1 / 1 point

- ○ Locating objects in an image belonging to different classes by drawing bounding boxes around them.
- ○ Locating an object in an image belonging to a certain class by drawing a bounding box around it.
- ◉ Locating objects in an image by predicting each pixel as to which class it belongs to.

Expand

Correct

9. Using the concept of Transpose Convolution, fill in the values of **X**, **Y** and **Z** below.

1 / 1 point

(*padding = 1, stride = 2*)

Input: 2x2

1	2
3	4

Filter: 3x3

1	0	-1
1	0	-1
1	0	-1

Result: 6x6

	0	1	0	-2	
	0	**X**	0	**Y**	
	0	1	0	**Z**	
	0	1	0	-4	

- ◯ X = -2, Y = -6, Z = -4
- ◉ X = 2, Y = -6, Z = -4
- ◯ X = 2, Y = 6, Z = 4
- ◯ X = 2, Y = -6, Z = 4

Expand

Correct

10. Suppose your input to a U-Net architecture is h x w x 3, where 3 denotes your number of channels (RGB). What will be the dimension of your output ?

1 / 1 point

- ◯ h x w x n where n = number of input channels
- ◯ h x w x n where n = number of filters used in the algorithm
- ◉ h x w x n where n = number of output classes
- ◯ h x w x n where n = number of of output channels

Expand

Correct