Achieving smooth category boundaries is a major difficulty to take into account while designing semantic segmentation models. Which of the following statements describe the origins of this problem? (Check all that apply.)
1 / 1 point

Objects within the same category having variable appearances. An example being multiple color and models for cars on the road.

Thin objects such as poles, tree trunks, and lane separators.

Correct
Correct!

The similarity in appearance between some categories such as road, curb, and sidewalk.

Correct
Correct!
2.

Question 2

When comparing the results of a semantic segmentation model to the ground truth, you found out that for the car category, its **class IOU** is **0.75**. Knowing that the number of false positives **(FP)** is **17**, and the number of false negatives **(FN)** is **3**, what is the number of true positives achieved by this model?
2 / 2 points

60

Correct
Correct!
3.

Question 3

To measure the performance of a semantic segmentation model over all classes, a good idea would be to average the class IOU.
1 / 1 point

True

False

Correct
Correct!
4.
Question 4
Which of the following do you typically see in a Semantic Segmentation Model? (Check all that apply.)
1 / 1 point

Multiple Convolutional layers followed by a Pool layer.

Correct
Correct!

Multiple Convolutional layers followed by an up-sampling layer.

Correct
Correct!

Up-sampling layers in the encoder stage of the architecture.

Up-sampling layers in the decoder stage of the architecture.

Correct
Correct!
5.
Question 5
Anchor boxes are an essential component of any semantic segmentation neural network architecture.
1 / 1 point

True

False

Correct
Correct!
6.
Question 6
In your semantic segmentation model an input feature map is passed through a nearest neighbor up-sampling layer. The output feature map's depth is equal to that of the input feature map.
1 / 1 point

True

False

Correct

7.
Question 7
A standard semantic segmentation architecture that uses a softmax output layer is allowed to associate multiple categories to a single pixel in the input image.
1 / 1 point

True

False

Correct
Correct!
8.
Question 8
Which of the bellow loss functions is usually used to train semantic segmentation models?
1 / 1 point

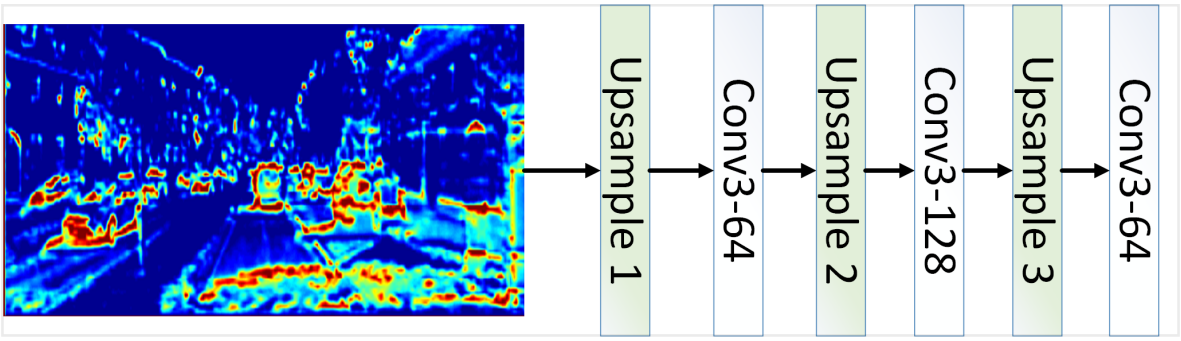
Mean Square Error (L2-Loss)

Cross-Entropy Loss

0-1 Loss

Mean Absolute Error (L1-Loss)

Correct
Correct!
9.
Question 9
A semantic segmentation model uses the following decoder architecture. The convolutions are all 3x3, have a padding size of 1, and have a number of filters shown in the figure. The up-sampling multiplier S is 2 for all upsampling layers.



If you pass an input of dimensions MxNxD through this decoder, what are the expected output dimensions?
Note: M is the width, N is the height, and D is the depth of the input.
2 / 2 points

8*M, 8*N, 128*D

6*M, 6*N, 64*D

8*M, 8*N, 64*D

M/8, N/8, 64*D

Correct

Correct!
10.
Question 10
In context of self-driving cars, semantic segmentation can be used to perform: (Check all that apply.)
1 / 1 point

Drivable space estimation.

Correct
Correct!

Velocity estimation of dynamic obstacles in the scene.

Lane boundary estimation.

Correct
Correct!

Localization in a predefined 3D map.

Constrain the image space used to perform 2D object detection.

Correct
Correct!
11.
Question 11
Which of the following categories in a semantic segmentation output map would be useful to determine lane boundaries?
1 / 1 point

Lane Separator

Correct
Correct!

Sidewalk

Correct
Correct!

Pedestrian

Road

Curb

Correct
Correct!
12.
Question 12
To estimate a plane model, an algorithm would require a minimum of:
1 / 1 point

Five points, chosen at random.

Three points, chosen to be non-collinear.

Three points, chosen to be collinear.

Five points, chosen to be non-collinear.

Correct

13.
Question 13
To estimate lines that could belong to lanes in a post-processed output image from semantic segmentation, containing only relevant categories, one would:
1 / 1 point

First apply Canny edge detection followed by a Kalman Filter to estimate lines.

Use RANSAC to estimate the road plane, then fit lines to its boundary.

First apply Canny edge detection followed by Hough transform line estimation.

First apply Hough transform line estimation followed by Canny edge detection.

Correct
Correct!