Try again once you are ready

Grade received 70% **To pass** 80% or higher

Special Applications: Face Recognition & Neural Style Transfer

Quiz • 30 min

Special Applications: Face Recognition & Neural Style Transfer

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Due May 2, 2:59 PM CST **Attempts** 3 every 8 hours

1. Face verification and face recognition are the two most common names given to the task of comparing a new picture against one person's face. True/False? **0 / 1 point**

- False
- ✗ True

Incorrect
You didn't select an answer.

2. Why is face verification problem considered a one-shot learning problem? Choose the best answer. **0 / 1 point**

- Because of the sensitive nature of the problem, we won't have a chance to correct it if the network makes a mistake.
- Because we might have only one example of the person we want to verify.
- Because we have only have to forward pass the image one time through our neural network for verification.
- Because we are trying to compare to one specific person only.

Incorrect
You didn't select an answer.

3. You want to build a system that receives a person's face picture and determines if the person is inside a workgroup. You have pictures of all the faces of the people currently in the workgroup, but some members might leave, and some new members might be added. To train a system to solve this problem using the triplet loss you must collect pictures of different faces from only the current members of the team. True/False? **1 / 1 point**

- ◉ False
- True

Correct
Correct. Although it is necessary to have several pictures of the same person, it is not absolutely necessary that all the pictures only come from current members of the team.

4. In the triplet loss: **1 / 1 point**

$$\max\left(\|f(A)-f(P)\|^2-\|f(A)-f(N)\|^2+\alpha, 0\right)$$

Which of the following are true about the triplet loss? Choose all that apply.

- ☑ We want that $\|f(A)-f(P)\|^2 < \|f(A)-f(N)\|^2$ so the negative images are further away from the anchor than the positive images.

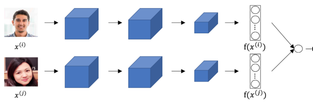
Correct
Correct. Being a positive image the encoding of P should be close to the encoding of A.

- ☐ A the anchor image is a hyperparameter of the Siamese network.
- ☑ $f(A)$ represents the encoding of the Anchor.

Correct
Correct. f represents the network that is in charge of creating the encoding of the images, and A represents the anchor image.

- ☐ α is a trainable parameter of the Siamese network.

5. Consider the following Siamese network architecture: **0 / 1 point**



The upper and lower networks share parameters to have a consistent encoding for both images. True/False?

- True
- ◉ False

Incorrect
Part of the idea behind the Siamese network is to compare the encoding of the images, thus they must be consistent.

6. Our intuition about the layers of a neural network tells us that units that respond more to complex features are more likely to be in deeper layers. True/False? **1 / 1 point**

- ◉ True
- False

Correct
Correct. Neurons that understand more complex shapes are more likely to be in deeper layers of a neural network.

7. Neural style transfer uses images Content C, Style S. The loss function used to generate image G is composed of which of the following: (Choose all that apply.) **1 / 1 point**

- ☐ T that calculates the triplet loss between S, G, and C.
- ☑ J_{style} that compares S and G.

Correct
Correct, in neural style transfer we are interested in the similarity between S and G, and the similarity between G and C.

- ☐ J_{saver} that compares C and S.
- ☑ $J_{combine}$ that compares C and G.

Correct
Correct, in neural style transfer we are interested in the similarity between S and G, and the similarity between G and C.

8. In neural style transfer the content loss J_{cost} is computed as: **0 / 1 point**

$$J_{cost}(G,C) = \left\|a^{[l](C)} - a^{[l](G)}\right\|^2$$

Where $a^{[l](S)}$ is the activation of the l-th layer of a ConvNet trained for classification. We choose l to be a very high value to use compared to the more abstract activation of each image. True/False?

- False
- ◉ True

Incorrect
We don't use a very deep layer since this will only compare if the two images belong to the same category.

9. In neural style transfer, what is updated in each iteration of the optimization algorithm? **1 / 1 point**

- The regularization parameters
- The neural network parameters
- The pixel values of the content image C
- ◉ The pixel values of the generated image G

Correct
Yes, neural style transfer is different from many of the algorithms you've seen up to now, because it doesn't learn any parameters; instead it learns directly the pixels of an image.

10. You are working with 3D data. You are building a network layer whose input volume has size 32x32x32x16 (this volume has 16 channels), and applies convolutions with 32 filters of dimension 3x3x3x16 (no padding, stride 1). What is the resulting output volume? **1 / 1 point**

- ◉ 30x30x30x32
- Undefined: This convolution step is impossible and cannot be performed because the dimensions specified don't match up.
- 30x30x30x16

Correct
Correct, you have used the formula $\lfloor \frac{n^{[l-1]}-f+2*p}{s} \rfloor + 1 = n^{[l]}$ over the three first dimensions of the input data.