Your grade: 80%

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

Next item

1. Which of the following do you agree with? 0 / 1 point

- ○ Face recognition requires K comparisons of a person's face.
- ○ Face recognition requires comparing pictures against one person's face.
- ◉ Face verification requires K comparisons of a person's face.

Incorrect
In face verification, we compare a new person's face picture against a particular person's face picture to determine if they belong to the same person.

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

- ○ Because we are trying to compare to one specific person only.
- ◉ Because we might have only one example of the person we want to verify.
- ○ 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 have only have to forward pass the image one time through our neural network for verification.

Correct
Correct. One-shot learning refers to the amount of data we have to solve a task.

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.

- ☑ $f(A)$ represents the encoding of the Anchor.

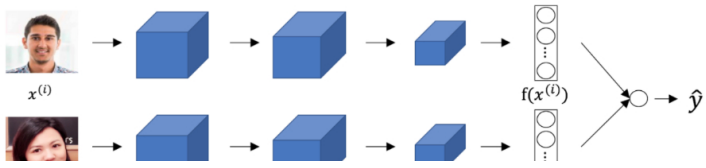
Correct
Correct. f represents the network that is in charge of creating the encoding of the images, and A represents the anchor image.

- ☐ A the anchor image is a hyperparameter of the Siamese network.
- ☑ 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.

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

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



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

- (●) True
- ( ) False

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

6. You train a ConvNet on a dataset with 100 different classes. You wonder if you can find a hidden unit which responds strongly to pictures of cats. (I.e., a neuron so that, of all the input/training images that strongly activate that neuron, the majority are cat pictures.) You are more likely to find this unit in layer 4 of the network than in layer 1. **1 / 1 point**

- (●) True
- ( ) False

Correct
Yes, this neuron understands complex shapes (cat pictures) so it is more likely to be in a deeper layer than in the first layer.

7. Neural style transfer is trained as a supervised learning task in which the goal is to input two images (x), and train a network to output a new, synthesized image (y). **0 / 1 point**

- (●) True
- ( ) False

Incorrect
No, Neural style transfer is about training the pixels of an image to make it look artistic, it is not learning any parameters.

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

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

Where $a^{[l](k)}$ 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?

- ( ) True
- (●) False

Correct
Correct. 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, which of the following better express the gradients used? **1 / 1 point**

- (●) $\frac{\partial J}{\partial G}$
- ( ) $\frac{\partial J}{\partial S}$
- ( ) $\frac{\partial J}{\partial W^{[l]}}$
- ( ) Neural style transfer doesn't use gradient descent since there are no trainable parameters.

Correct
Correct, we use the gradient of the cost function over the value of the pixels of the generated 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**

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

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