Congratulations! You passed!

Grade received 100% **Latest Submission Grade** 100% **To pass** 80% or higher

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1. Face verification requires comparing a new picture against one person's face, whereas face recognition requires comparing a new picture against K persons' faces. **1 / 1 point**

- False
- True

Expand

Correct
Correct.

2. Why is the face verification problem considered a one-shot learning problem? Choose the best answer. **1 / 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 are trying to compare to one specific person only.
- Because we have only have to forward pass the image one time through our neural network for verification.

Expand

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**

- True
- False

Expand

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. Triplet loss:

4. Triplet loss: 1 / 1 point

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

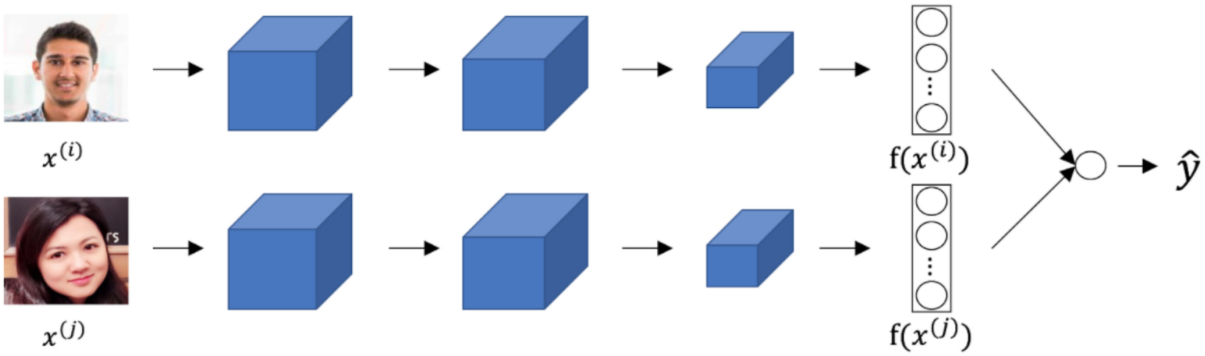
is larger in which of the following cases?

- When the encoding of A is closer to the encoding of P than to the encoding of N.
- When the encoding of A is closer to the encoding of N than to the encoding of P.
- When $A=P$ and $A=N$.

Expand

Correct
Correct. In this case $|f(A)-f(P)|^2-|f(A)-f(N)|^2$ is positive thus the triplet loss gives a positive value larger than α.

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



Which of the following do you agree with the most?

- This depicts two *different* neural networks with different architectures, although we use the same drawing.
- The upper and lower neural networks depicted have exactly the same parameters, but the outputs are computed independently for each image.
- The two neural networks depicted in the image have the same architecture, but they might have different parameters.
- Although we depict two neural networks and two images, the two images are combined in a single volume and pass through a single neural network.

Expand

Correct
Correct. Both neural networks share the same weights, and each image passes through the neural network in an independent manner.

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

Expand

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 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**

- [x] 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_{corr} that compares C and S.
- [x] $J_{content}$ 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.

- [ ] T that calculates the triplet loss between S

Expand

Correct
Great, you got all the right answers.

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

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

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

Expand

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, what is updated in each iteration of the optimization algorithm? **1 / 1 point**

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

Expand

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. The input "image" has size $32 \times 32 \times 32 \times 3$, if you apply a convolutional layer with 16 filters of size $4 \times 4 \times 4$, zero padding and stride 1. What is the size of the output volume? **1 / 1 point**

- $31 \times 31 \times 31 \times 16$.
- $29 \times 29 \times 29 \times 13$.
- $29 \times 29 \times 29 \times 3$.
- $29 \times 29 \times 29 \times 16$.

Expand

Correct
Correct, we can use the formula $\lfloor \frac{n^{[l-1]} - f + 2 \times p}{s} \rfloor + 1 = n^{[l]}$ on the three first dimensions.