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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**

- (•) True
- ( ) False

Expand

Correct
Correct.

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

- [ ] It is best to build a convolutional neural network with a softmax output with as many outputs as members of the group.
- [x] This can be considered a one-shot learning task.

Correct
Correct. Since we might have only one example of the person we want to recognize.

- [x] It will be more efficient to learn a function $d(\text{img}_1, \text{img}_2)$ for this task.

Correct
Correct. Since this is a one-shot learning task this function will allow us to compare two images to verify identity.

- [ ] This can't be considered a one-shot learning task since there might be many members in the workgroup.

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Correct
Great, you got all the right answers.

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. In the triplet loss: **0 / 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.

- [x] $f(A)$ 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.

- [x] α is a trainable parameter of the Siamese network.

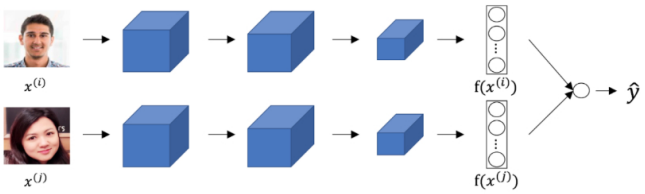
  ! **This should not be selected**
  α is a hyperparameter that prevents the network from send $f(\text{img})$ always to zeros.

- [ ] A the anchor image is a hyperparameter of the Siamese network.
- [ ] We want that $$\left\| f(A) - f(P) \right\|^2 < \left\| f(A) - f(N) \right\|^2$$ so the negative images are further away from the anchor than the positive images.

Expand

Incorrect
You didn't select all the correct answers

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?

- (•) False
- ( ) True

Expand

Incorrect
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 cats, dogs, birds, and other types of animals. You try to find a filter that strongly responds to horizontal edges. You are more likely to find this filter in layer 6 of the network than in layer 1. True/False? **1 / 1 point**

- ( ) True
- (•) False

Expand

Correct
Correct. Edges are a very low-level feature, thus it is more likely to find such a feature detector in the first layers of the 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.
- [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 $$C$$.

- [x] $$J_{style}$$ that compares $$S$$ and $$G$$.

Expand

Correct
Great, you got all the right answers.

8. In neural style transfer, we define style as: 1 / 1 point

- The correlation between activations across channels of an image.
- $\left\|a^{[l](S)} - a^{[l](G)}\right\|^2$ the distance between the activation of the style image and the content image.
- The correlation between the activation of the content image C and the style image S.
- The correlation between the generated image G and the style image S.

Expand

Correct
Correct, this correlation is represented by $G^{[l](I)}_{kk'}$ for the image I.

9. In neural style transfer, which of the following better express the gradients used? 1 / 1 point

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

Expand

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

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

Expand

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.