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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

- [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.

- [ ] It is best to build a convolutional neural network with a softmax output with as many outputs as members of the group.
- [ ] This can't be considered a one-shot learning task since there might be many members in the workgroup.
- [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.

Expand

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 get many persons and take several pictures of each one. Which of the following do you agree with? (Select the best answer.)

1 / 1 point

- (●) You take several pictures of the same person to train $d(\text{img}_1, \text{img}_2)$ using the triplet loss.
- ( ) It would be best to increase the number of persons in the dataset by taking only one picture of each person to have a more representative set of the population.
- ( ) You take several pictures of the same person because this way you can get more pictures to train the network efficiently since you already have the person in place.
- ( ) You shouldn't use persons outside the workgroup you are interested in because that might create a high variance in your model.

Expand

Correct

Correct. To train using the triplet loss you need several pictures of the same person.

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.

- [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.

- [ ] A the anchor image is a hyperparameter of the Siamese network.
- [ ] α is a trainable parameter of the Siamese network.
- [x] 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.

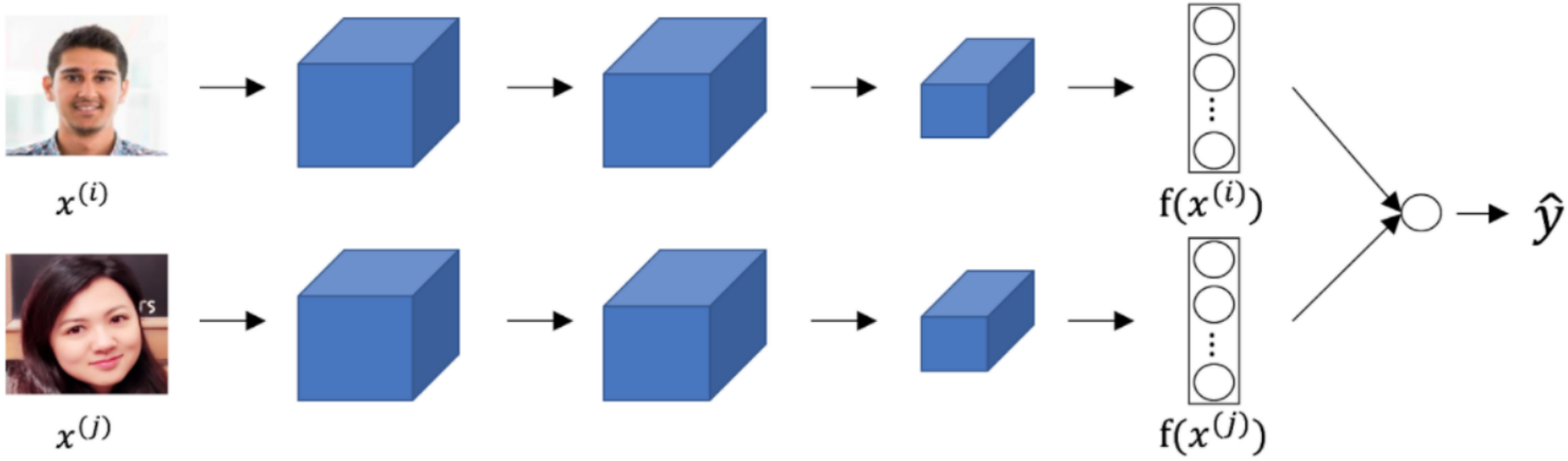
Expand

Correct

Great, you got all the right answers.

5. Consider the following Siamese network architecture:

1 / 1 point



The upper and lower neural networks have different input images, but have exactly the same parameters.

- (●) True
- ( ) False

Expand

Correct

Yes it is true, parameters are shared among these two networks.

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

- ○ False
- ◉ True

Expand

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

- [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
- [ ] 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

Expand

Correct

Great, you got all the right answers.

8. In the deeper layers of a ConvNet, each channel corresponds to a different feature detector. The style matrix $G^{[l]}$ measures the degree to which the activations of different feature detectors in layer l vary (or correlate) together with each other.

1 / 1 point

- False
- True

Expand

Correct

Yes, the style matrix $G^{[l]}$ can be seen as a matrix of cross-correlations between the different feature detectors.

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

1 / 1 point

- (•) The pixel values of the generated image G
- ( ) The pixel values of the content image C
- ( ) The neural network parameters
- ( ) The regularization 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

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

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.