CS-C1000 - Introduction to Artificial Intelligence, 02.03.2021-09.04.2021

Started on	Saturday, 20 March 2021, 11:11 AM
State	Finished
Completed on	Saturday, 20 March 2021, 1:31 PM
Time taken	2 hours 19 mins
Grade	**10.00** out of 10.00 (**100**%)

Information

Flag question

These are the questions related to **Computer Exercise A** (Deep Generative Autoencoder Model) on the course.

- The exercise itself is to be done by logging into https://jupyter.cs.aalto.fi.
- Follow the instructions given during the exercise session (or look at the instructions in the **session slides**).
- Once you are in the code environment, follow read the descriptions and run the code.
- Finally, answer questions here.

Question **1**

Flag question Mark 2.00 out of 2.00 Correct

Did you get the model loaded?

- If not, you should not continue, but either wait longer or get back to the system once it is less crowded.
- This question is just to ensure, you got started.

Select one:

- a. Yes, after some time the model was loaded. ✓
- b. No, I did not get that far.

Your answer is correct.

The correct answer is: Yes, after some time the model was loaded.

Question **2**

Flag question Mark 2.00 out of 2.00 Correct

Simulating faces of fake people. Following the instructions in the code, you should have put in your **student number** to make the results unique only for you. Once you run the code, you should see four face images being created. This question is to check whether you got this step done.

- Note that this is not autograded, but instead gives an opportunity to check whether you ran the code or not.
- If the results are not clear, just choose what you think makes sense.

Select one:

- a. I would characterize that the female/male ratio is 3/1. ✓
- b. I would characterize all the fake faces as male.
- c. I would characterize that the female/male ratio is 2/2.
- d. I would characterize that the female/male ratio is 1/3.
- e. I would characterize all the fake faces as female.

Your answer is correct.

The correct answers are: I would characterize all the fake faces as female., I would characterize that the female/male ratio is 3/1., I would characterize that the female/male ratio is 2/2., I would characterize that the female/male ratio is 1/3., I would characterize all the fake faces as male.

Question **3**

Flag question Mark 2.00 out of 2.00 Correct

Here the idea is to reconstruct an existing face image by first encoding it to a compact representation and then decoding that representation back to a face. Would you say the original and reconstructed face images have something in common. Did the model capture the essential information (like hair color, pose, facial expressions, etc.)?

- Do not worry, you will get points for all options.

Select one:

- a. Kind of, there are some similarities in the original and reconstructed face, but I'm not very happy with the results. ✓
- b. No, the original and reconstructed faces do not appear to have anything in common.
- c. Yes, the original and reconstructed images are alike. The model clearly captured the essentials.

Your answer is correct.

The correct answers are: Yes, the original and reconstructed images are alike. The model clearly captured the essentials., No, the original and reconstructed faces do not appear to have anything in common., Kind of, there are some similarities in the original and reconstructed face, but I'm not very happy with the results.

Question **4**

Flag question Mark 2.00 out of 2.00 Correct

In the interpolation experiment, what is the idea behind the setup?

Select one:

- a. You first encode the input face images to the latent space, in order to find the latent space representation that would have the features 'in-between' the two input faces. Then you decode this 'in-between' face back to an image. ✓
- b. You train a method that creates random faces.
- c. You take the average of two pixel images to find the face that would be 'in-between' the two input faces.

Your answer is correct.

Just taking the average of two images does not yield anything sensible in this case. Instead, taking the average of the feature representation in the latent space, should yield something in-between (in face-sense) the two input face images.

The correct answer is: You first encode the input face images to the latent space, in order to find the latent space representation that would have the features 'in-between' the two input faces. Then you decode this 'in-between' face back to an image.

Question **5**

Flag question Mark 1.00 out of 1.00 Correct

Modifying specific image attributes: familiarise yourself with how the "smile_delta" modifies the images produced by the generative autoencoder model.

What would you expect to happen if you set the "alphas", in the final cell of the notebook, to be negative values? (you can check your answer by trying it out yourself!)

Select one:

- a. The model will output a frowning face. ✓
- b. The model with output a laughing face.
- c. The hair colour will be changed.

Your answer is correct.

The smile vector is produced by comparing images with smiling faces vs. images without smiling faces. We would expect that setting alpha to a negative value might result in a frowning face.

The correct answer is: The model will output a frowning face.

Question **6**

Flag question Mark 1.00 out of 1.00 Correct

If the previous tasks felt too easy or you want to actually do some coding, feel free to have a look at the optional tasks. There are a lot of things that can be done with models of this type, and you are free to experiment.

This questions is only to check whether there is interest in the optional tasks. You get points anyway.

Select one:

- a. Sounds interesting, but I am not familiar enough with Python to actually tweak and code. ✓
- b. I did/I will experiment further with the model.
- c. I am not interested in the optional tasks.

Your answer is correct.

The correct answers are: I did/I will experiment further with the model., Sounds interesting, but I am not familiar enough with Python to actually tweak and code., I am not interested in the optional tasks.

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