GANs

Latest Submission Grade 100%

1.

Question 1

In GANs, the network learns to improve on creating data by the way of knowledge flowing back from the *discriminator* to the *generator.*

1 / 1 point

○

False

●

True

Correct

Correct! The feedback sent from the discriminator helps the generator in better generation of the new data.

2.

Question 2

In the process of training a GAN, the *generator* is trained by getting it to produce a batch of fake images, and also labelling them as real images despite them being fake. *While this happens the evaluation performed by the discriminator helps in updating the parameters for the discriminator.*

1 / 1 point

●

False

○

True

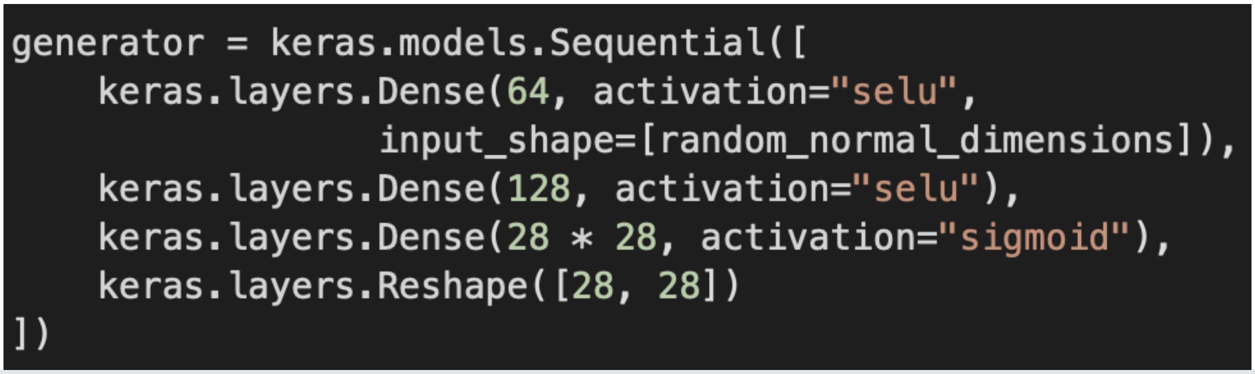
Correct

Correct! The parameters of the *discriminator* are frozen during this step.

3.

Question 3

Consider the following piece of code for a generator, what is the purpose of using the *selu* activation function instead of ReLU?



```
generator = keras.models.Sequential([
    keras.layers.Dense(64, activation="selu",
                       input_shape=[random_normal_dimensions]),
    keras.layers.Dense(128, activation="selu"),
    keras.layers.Dense(28 * 28, activation="sigmoid"),
    keras.layers.Reshape([28, 28])
])
```

1 / 1 point

○

You want to remove the negative values which cancel out the positive values.

●

ReLU removes the noise within your data, but your intention is to keep it which is why selu is used.

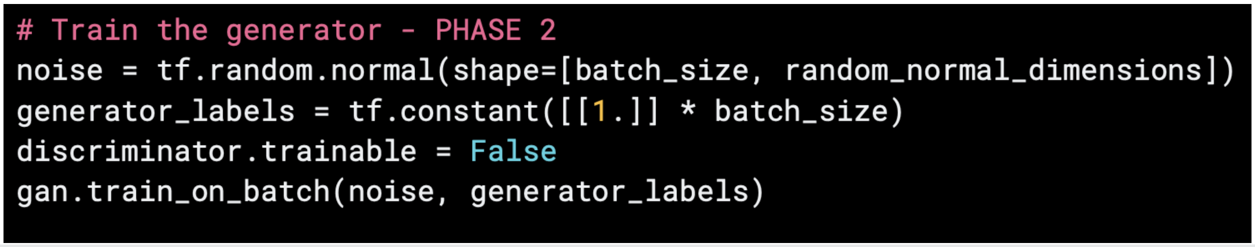
Correct

Correct!

4.

Question 4

Consider the following code for training the generator and check all that are true.



```
# Train the generator - PHASE 2
noise = tf.random.normal(shape=[batch_size, random_normal_dimensions])
generator_labels = tf.constant([[1.]] * batch_size)
discriminator.trainable = False
gan.train_on_batch(noise, generator_labels)
```

1 / 1 point

□

You set *all* of the generator_labels=1 and pass in only the real images in *phase 2* of the training.

☑

You set the trainable parameters of the discriminator to *false* because updating the discriminator weights will corrupt the training process.

Correct

Correct! You set them to false because the discriminator weights will get corrupted because of feeding it fake labels against both, *fake and original* images.

☑

You set *all* of the generator_labels=1 and pass in only the fake images in *phase 2* of the training.

Correct

Correct! You pass both, only the *fake images, but* set the label of all of them to 1 so you could try to trick the discriminator.

□

You set the trainable parameters of the discriminator to *false* because updating the discriminator weights after every epoch is costly in the *phase 2* of the training.

5.

Question 5

With regards to GANs, what does the term *mode collapse* mean?

1 / 1 point

○

When the generator is no longer able to fool the discriminator with the generated data.

●

When the model starts to generate more and more of the same data with which it was able to fool the discriminator.

○

When the quality of the generated data stops to improve as the number of epochs increase.

○

When the discriminator is no longer able to distinguish between real and fake data.

Correct

Correct!

6.

Question 6

Which of the following are some of the *best practices* when building GANs (**DCGans**) which help us avoid the problem of *mode collapse* ? Check all that apply.

1 / 1 point

□

In the generator's architecture you should use pooling layers or Conv2D instead of Conv2DTranspose layers.

☑

Avoid the use of *Dense* layer in both the discriminator and the generator.

Correct

Correct!

□

All activation layers in the *generator*'s architecture should be *selu* and in the *discriminator*'s all activation layers should be *ReLU*.

☑

Batch normalization should be used in the generator except in the output layer.

Correct

Correct!

7.

Question 7

You can apply a 3x3 stride filter of 1 on a 3x3 image using Conv2DTranspose (Process of deconvolution).

1 / 1 point

○

False

●

True

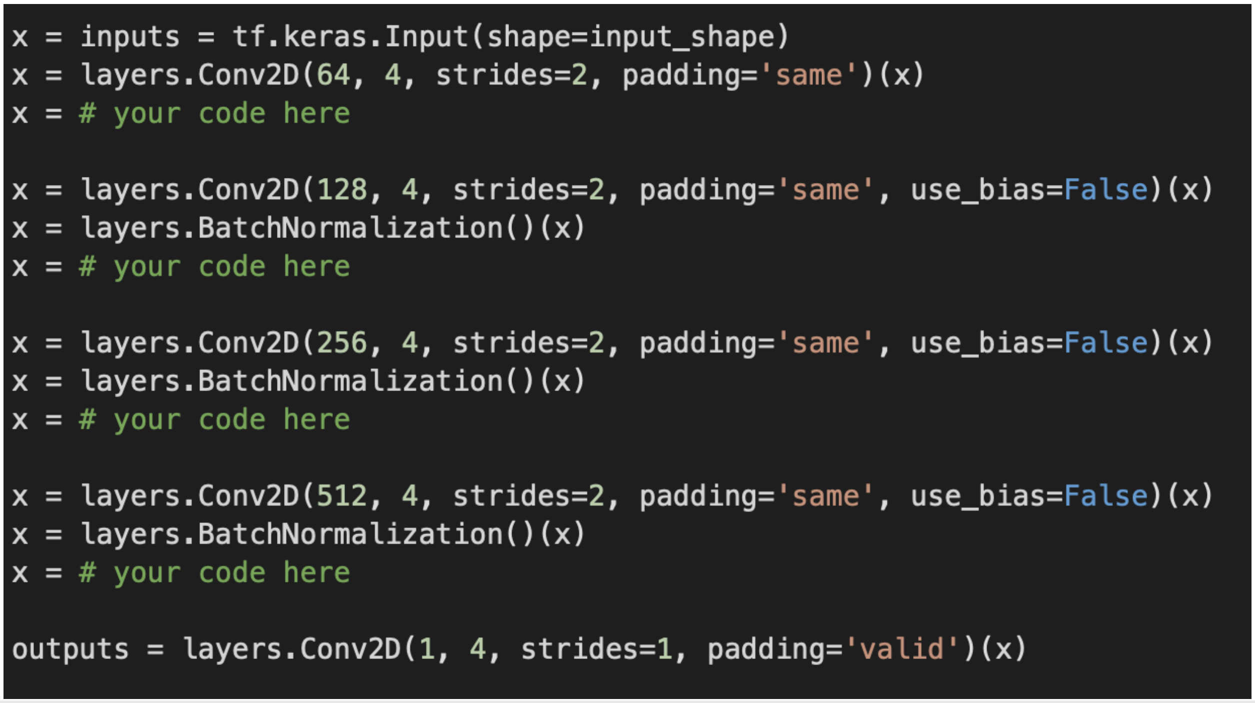
Correct

Correct! While it may not sound possible, Conv2DTranspose makes it possible by filling more data in the 3x3 image, making it a 9x9 image.

8.

Question 8

Following is the code of a *discriminator*. According to *best practices*, which activation function should be used ?



```
x = inputs = tf.keras.Input(shape=input_shape)
x = layers.Conv2D(64, 4, strides=2, padding='same')(x)
x = # your code here

x = layers.Conv2D(128, 4, strides=2, padding='same', use_bias=False)(x)
x = layers.BatchNormalization()(x)
x = # your code here

x = layers.Conv2D(256, 4, strides=2, padding='same', use_bias=False)(x)
x = layers.BatchNormalization()(x)
x = # your code here

x = layers.Conv2D(512, 4, strides=2, padding='same', use_bias=False)(x)
x = layers.BatchNormalization()(x)
x = # your code here

outputs = layers.Conv2D(1, 4, strides=1, padding='valid')(x)
```

1 / 1 point

● LeakyReLU

○ ReLU

○ tanh

○ selu

Correct

Correct! You want to maintain some values when learning, instead of zeroing them out, which is what ReLU does.