**Quiz 8**

Adding more layers will not help autoencoder learn more complex codings.

True

**False**

Which of the following can be an application of generative learning?

Creating artworks

Synthesizing time-series data for simulation and planning

Outlier detection when encountering some new or rare

Infer latent representation that can be useful as general features

**All of the above**

Which of the following statement is FALSE regarding the latent space?

Smaller latent space force smaller bottleneck layer

Autoencoding is a form of compression

Larger latent space means a higher quality of generated images

**Reconstruction loss forces the latent representation to capture as little information about the data as possible**

Why can't we backpropagate gradients through sampling layers of a Variational Autoencoder?

Because there's a fixed prior on the latent distribution

Because of the reconstruction loss is not MSE

**Because we need to sample the latent representation from a random distribution**

Because we cannot simply pass the gradient through a series of deterministic nodes

Which of the following is how an AutoEncoder can be used to improve sample selection in a dataset that lacks sufficient training samples for outliers/edge cases?

Estimate the distribution of the latent structure (z variable) and clip the curve placing a higher emphasis on features found on the edges of the distribution and increasing the emphasis given to features found in the center of the distribution.

**Estimate the distribution of the latent structure (z variable) and flatten the curve placing a higher emphasis on features found on the edges of the distribution and lowering the emphasis given to features found in the center of the distribution.**

Estimate the distribution of the latent structure (z variable) learn the emphasis as prior given to features found in the center of the distribution.

All of the above

Under which of the below conditions, should the training of GAN stop?

Discriminative Distribution equals to Generative Distribution

**Discriminative Distribution is uniform**

Generative Distribution is uniform

Discriminative Distribution equals to Data Distribution

Which statement is true about the limitations of GANs?

**When Mode Collapse occurs, the Generator cannot successfully produce images to fool the Discriminator**

If the Discriminator is too good, then the Generator training fails due to exploding gradients.

The parameters of both Generator and Discriminator can start oscillating and then become stable.

Nothing guarantees that the Nash Equilibrium can be reached

What will happen to a GAN if the discriminator is too powerful such that it can predict fake or real perfectly?

It will succeed because the discriminator sets perfect examples for the generator to follow.

It will fail because the discriminator will not be able to discriminate realistic-looking data.

It will succeed because the generator will be able to meaningfully converge towards realistic-looking data.

**It will fail because the generator will not be able to meaningfully converge towards realistic-looking data.**

None of the above

What is the main difference between StyleGAN and original GAN?

StyleGAN adds noise the loss function to improve quality of the generated images

StyleGAN adds the mapping network as part of the discriminator

**StyleGAN modifies the generator architectures to include the synthesis network**

StyleGAN uses a technique called mixing regularization to promote the styles at adjacent levels to be related

How would you spot a deepfake in real life \*with the naked eye\*?

The lip synching might be bad

The skin tone is patchy, there can be flickering around the edges

Fine details, such as hair, are not rendered well

Inconsistent lighting effects, such as illumination and reflection on the iris

**None of the above: they keep evolving---as soon as a weakness is revealed, it will be fixed**