**Image Noise Reduction with Auto-encoders**

1.Question 1

Let's say you have an Auto-encoder model built with Keras:

The model is called **ae\_model**

Training images are reshaped and pre-processed and are stored in a numpy array called **x\_train** of shape (10000, 1000)

Training labels **y\_train** represent the class labels that the training examples belong to. This has a shape (10000, 4). The labels are one hot encoded and belong to one of the 4 classes.

You have also synthesized a set of reshaped noisy images that correspond to the examples given in x\_train. Let's say this noisy, synthesized numpy array is called **x\_train\_noisy** and has a shape (10000, 1000).

How would you train the model?

**1 / 1 point**













**ae\_model.fit(x\_train\_noisy, x\_train, epochs=epochs)**

Correct, we have an auto-encoder model so we want it to learn to take noisy images and produce clean images.

2.Question 2

Select all statements that are true:

**0.667 / 1 point**



**This algorithm to reduce dimensionality of data, as learned from the data itself, can also be used for reducing noise in the data.**

Correct

Correct.



**Auto-encoding is an algorithm to help reduce dimensionality of data.**

Correct

Correct.



**Auto-encoding can be used for lossy data compression where the compression is dependent on the given data itself.**

You didn’t select all the correct answers

3.Question 3

While training a neural network auto-encoder model to clean given images, as we did in the hands on project, what should be the examples and labels (or simply, inputs and outputs of this model)

**1 / 1 point**



Inputs are clean images, outputs are noisy images.



Inputs are noisy images, outputs are classes that the images belong to.



**Inputs are noisy images, outputs are clean images.**

Correct

Correct.

4.Question 4

We added noise to our data synthetically because in real world applications, while we will often get noisy data, we will not have the corresponding *clean* labels available. Instead, when we synthesize noise on already clean images, we can train an Auto-encoder to focus on the important parts of the images and then when it’s applied to real world noisy data, it knows where to focus and which features to retain.

Based on the hands on project, do you think this statement is true?

**1 / 1 point**



**True**



False

Correct

Correct.

5.Question 5

Assuming you're solving a classification problem. If you have a dataset with each example has a 128 dimensional feature vector and a scalar label. The label value can be either 0, 1 or 2. Without doing any data processing, which loss function would you use?

**1 / 1 point**



**Sparse categorical cross entropy**



Categorical cross entropy

Correct

Correct