DL ASSIGNMENT 7

Q1) dimensionality reduction and information retrieval are main tasks of auto encoders. Other use cases include image processing, anomaly detection, machine translation, drug discovery etc.

Q2) we can train unlabelled data with auto encoder which will try to understand the relationships and then use these weights with labelled data.

Q3) auto encoder may also overfit even though it perfectly reconstructs the inputs. To know the performance of an auto encoder, we need to check its regularisation. So, with other testing data, we need to see if there is huge difference in accuracy compared to training data. We can use roc arc score as well.

Q4) in undercomplete, hidden layers are fewer than input and output layers while in overcomplete, hidden layers are more than input and output layers.

Q5) tying weights reduces the number of parameters due to weights sharing. By taking transpose of weighs of encoder, we get weights of decoder. This way, both eights are tied.

Q6) generative models have data distribution and can predict how outcomes based on probability. For example, generating next word in sequence is generative. GAN is a generative model.

Q7) GAN generates new data with existing dataset. Usecases:

Generate examples for image datasets, generate new poses for humans, text to image, photos to emojis etc.

Q8) mode collapse, non convergence and instability are challenges in training GANs.