1. What are Vanilla autoencoders?

In its simplest form, the autoencoder is a three layers net, i.e. a neural net with one hidden layer. The input and output are the same, and we learn how to reconstruct the input, for example using the adam optimizer and the mean squared error loss function.

1. What are Sparse autoencoders?

* A sparse autoencoder is simply an autoencoder whose training criterion involves a sparsity penalty.
* In most cases, we would construct our loss function by penalizing activations of hidden layers so that only a few nodes are encouraged to activate when a single sample is fed into the network.

1. What are Denoising autoencoders?

A Denoising Autoencoder is a modification on the autoencoder to prevent the network learning the identity function. Specifically, if the autoencoder is too big, then it can just learn the data, so the output equals the input, and does not perform any useful representation learning or dimensionality reduction.

1. What are Convolutional autoencoders?

Convolutional Autoencoder is a variant of Convolutional Neural Networks that are used as the tools for unsupervised learning of convolution filters. They are generally applied in the task of image reconstruction to minimize reconstruction errors by learning the optimal filters. Once they are trained in this task, they can be applied to any input in order to extract features. Convolutional Autoencoders are general-purpose feature extractors differently from general autoencoders that completely ignore the 2D image structure. In autoencoders, the image must be unrolled into a single vector and the network must be built following the constraint on the number of inputs.

1. What are Stacked autoencoders?

A stacked autoencoder is a neural network consisting of several layers of sparse autoencoders where output of each hidden layer is connected to the input of the successive hidden layer.

1. Explain Extractive summarization.

Extractive summarization aims at identifying the salient information that is then extracted and grouped together to form a concise summary. Abstractive summary generation rewrites the entire document by building internal semantic representation, and then a summary is created using natural language processing.

1. Explain Abstractive summarization.

Abstractive summarization, on the other hand, is a technique in which the summary is generated by generating novel sentences by either rephrasing or using the new words, instead of simply extracting the important sentences.

1. Explain Beam search.

Beam search is a heuristic search algorithm that explores a graph by expanding the most promising node in a limited set. Beam search is an optimization of best-first search that reduces its memory requirements.

1. Explain Length normalization.

Document length normalization adjusts the term frequency or the relevance score in order to normalize the effect of document length on the document ranking. Length normalization formula is to divide the number of occurrences by the length of the document.

1. Explain ROUGE metric evaluation.

ROUGE stands for Recall-Oriented Understudy for Gisting Evaluation. It is essentially a set of metrics for evaluating automatic summarization of texts as well as machine translations. It works by comparing an automatically produced summary or translation against a set of reference summaries (typically human-produced).