**Assignment\_6**

1. What are Vanilla autoencoders

**Ans: 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

**Ans: A Sparse Autoencoder is a type of autoencoder that employs sparsity to achieve an information bottleneck. Specifically the loss function is constructed so that activations are penalized within a layer.**

1. What are Denoising autoencoders

**Ans: 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

**Ans: 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**.

1. What are Stacked autoencoders

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

1. Explain how to generate sentences using LSTM autoencoders
2. Explain Extractive summarization

Ans: Extractive methods **attempt to summarize articles by identifying the important sentences or phrases from the original text and stitch together portions of the content to produce a condensed version. These extracted sentences are then used to form the summary**.

1. Explain Abstractive summarization

Ans: Abstractive Summarization is **a task in Natural Language Processing (NLP) that aims to generate a concise summary of a source text**.

1. Explain Beam search

**Ans: Beam search is the most popular search strategy for the sequence to sequence Deep NLP algorithms like Neural Machine Translation, Image captioning, Chatbots, etc. Beam search considers multiple best options based on beamwidth using conditional probability, which is better than the sub-optimal Greedy search.**

1. Explain Length normalization

**Ans: Document length normalization adjusts the term frequency or the relevance score in order to normalize the effect of document length on the document ranking**.

1. Explain Coverage normalization

**Ans: To calculate normalized coverage, the coverage is divided by the average coverage over all 10 base positions . Normalized coverage is then grouped into ranges (0 to ≥ 3.0), as denoted by the shading in Figures 5A and 5B, and the total number of bases that fall in those ranges are counted.**

1. Explain ROUGE metric evaluation

**Ans: ROUGE-N, ROUGE-S and ROUGE-L can be thought of as the granularity of texts being compared between the system summaries and reference summaries. For example, ROUGE-1 refers to overlap of unigrams between the system summary and reference summary**.