Overview of NLP

a. Natural Language Processing (NLP) helps computers in processing human language. It allows computers to read text and distinguish between each word. It also allows computers to recognize patterns and phrases which can then be used to execute a number of tasks.

b. NLP is a branch of AI.

c. *Natural Language Understanding* means that each person involved in the conversation understands what the other people said. *Natural Language Generation* means the development of verbal responses to other people's statements.

d. Some modern applications of NLP include Machine translation such as Google Translation, Automated email replies, and Automated call dispatcher.

e. Following are the three main approaches used for NLP:

 a. Rules-based: The computer is provided with a list of rules, and the computer uses those rules to analyze the text it's processing. One example involves giving the computer a list of rules for producing a sentence and using that system to generate grammatically correct sentences. Another example of this approach involves using a few regular expressions and a list of exceptions to covert plural words into singular forms of those words. Several text processing problems can be solved using this approach, but it can't be used for bigger tasks because human language is very complex, and it can't be fully explained in a list of rules.

 b. Statistical and Probabilistic: A computer using this approach counts the number of words and finds the probabilities of each word to predict the most likely sequence of those words. This approach works best when there is a large amount of data available to train the computer. Language models using this approach can be used to predict the phrase you are searching when you type words into a search bar.

 c. Deep Learning: This approach allows a computer to use huge amount of data and increased processing power to figure out the context of a conversation, remember a user's previous statements, and make the interaction as human as possible. One example of this approach is virtual assistants.

f. Initially, I took this course because I couldn't take the AI course due to scheduling constraints, but now, after being introduced to this topic, I believe this might have turned out to be a better choice for me at this time. The reason I say that is because NLP is a branch of AI which means after I grasp the concept of NLP, it will be a lot easier for me to understand the larger picture which is Artificial Intelligence. Not only that, but this course will also give me a chance to go in a field that is pretty new and has a lot of scope.