Overview of NLP

What is NLP?
NLP, natural language processing, is how a computer parses through written and spoken language. Natural language is what we call human language. Processing natural language requires the computer to understand context clues, grammar, and other such ambiguities of human language.

The relationship between AI and NLP:
Natural language processing is a domain within artificial intelligence. It works as a branch that specifically helps to understand human languages

Natural language understanding v. natural language generation

The former is analyzing text and understanding/interpreting the meaning. It has to look at the grammar as well as the intended meaning of the word. The latter, on the other hand, focuses on creating sentences with the correct grammar and meaning.

Modern NLP applications:

1. Chatbots
    - Commonly used by businesses to assist customers in the absence of an employee
2. Translators
    - Such as google translate that takes an input and uses nlp to change it to another language
3. Spell check
    - Applications such as grammarly that can look the semantics of a sentence and determine if there is any changes that can be made

3 main approaches to NLP:

The initial approach to NLP began with the rules based approach. This works very reliably but has a smaller scope than other methods. For example earlier translation natural processors used rule based approaches. Whatever word is input; the processor searches for a matching word in the desired language.

Another approach to NLP is machine learning. This involves using models and is generally more mathematical compared to the rule based technique which has a list of rules that it will parse through. With machine learning, there is a larger scope and the processor is more capable of understanding humans. This is because the models allow them to continuously optimize their pattern recognition. It also allows inferences based on the given test data. An example of this is chatbots and virtual assistants such a siri and alexa.

The third method, a slightly more advanced version of machine learning is neural networks. It requires less test data and gives the machine the opportunity to learn and pick up patterns.

Why I like NLP:

I am interested in natural language processing because I believe it is a growing scope that will provide very productive for our society. I took machine learning where I touched the surface of natural language processing. I realized that this is a topic that I enjoy that is helpful as well. I am interested in using technology in healthcare. I hope through this course I can develop the skills required to create efficient software to benefit society.