Overview of NLP

Natural Language Processing (NLP) is a field within computer science concerned with how computers analyze and process natural human language. Artificial intelligence (AI) is related to NLP because NLP is a subfield within AI, that is focused on helping computers understand human writing and speech. Within NLP there are two big areas, natural language understanding (NLU) and natural language generation (NLG). The difference is that NLU is computers understanding human text or speech, while NLG is about computers being able to write or speak in human language in response to some human input. NLP has a lot of modern-day applications such as email filters, smart assistants like Google assistant, Alexa, etc.

There are three main approaches to NLP, the first one is Rules-based approach. Rules-based means supplying the computer with a set of rules to interpret human language, but considering how complex human language is this does not work very well. Examples include spell check, context-free grammar, and certain chat bots.

The second approach to NLP is Statistical and Probabilistic approach. This approach involves giving a computer a lot of data and then letting it make inferences on the data. This approach has the downside of needing a large amount of data and a lot of processing power. Examples include the computer looking at the use of word frequencies and some traditional machine learning frequencies.

The third approach that is the newest is Deep Learning approach. The deep learning approach is essentially having the computer learn by example from large amounts of data, or in other words learn more like a human does. Deep learning approach for NLP has improved results in language translation, generation, understanding, and more.

I find NLP to be interesting mainly because computers being able to understand human language and produce human like responses seems very useful and amazing. I do not know when or for what project I may use what I learn about NLP in this class, but I can imagine using it in some kind of cool project.