

Natural Language Processing (NLP) is defined as the field of computer science that deals with how computers can process words and spoken dialogue. NLP uses a variety of techniques, such as rule-based parsing, using statistics and probability, and even deep learning models. NLP can be considered a form of artificial intelligence, a subfield if you will. NLP also uses a lot of the disciplines of AI, such as deep learning and computer vision.

Natural Language Understanding is, as the name suggests, the process of the computer understanding spoken or written human language. NLU also consists of the processing and analysis of this language. On the other hand, Natural Language Generation refers to the generation of language that is similar to humans. This generation requires the understanding of human language syntax and semantics.

There are a lot of modern uses of NLP. For example, ChatGPT has been prominent in the academic world. Another example is Google's spam filter, which processes emails and analyzes them for spam content.

Now I will go over the three main approaches to NLP. The first is the simplest yet still widely used: the rule-based approach. Some simple examples include regular expressions, which verifies formatting of text through rules and formats, and email inputs, which checks to make sure a valid email format is inputted. Unfortunately, this method of NLP is not scalable.

The second main approach is the statistical/probabilistic approach. This approach requires a lot of (generally labeled) text/audio data to feed into a machine learning model. The model will then be used to analyze speech/text and generate appropriate outputs. Some examples of this include Google's Google Translate translation system, Apple's Siri voice assistant, and Amazon's similar Alexa service.

The final main approach is through deep learning. This is a relatively newer field and thus not as widespread. However, many new contemporary services are emerging, such as ChatGPT. This type of NLP utilizes deep learning to create more and more intelligent models. Models such as ChatGPT are called large language models and can answer a multitude of queries.

I am personally interested in NLP. I've seen a lot of what NLP models can do and would like to integrate them into my daily workflow and projects. I find the way people use NLP to automate tasks and analyze their daily patterns fascinating, and I would love to explore the ways I can use NLP to do the same.