

Overview of NLP

NLP is essentially allowing computers to work with and process natural human language, as opposed to data given in specific formats. This allows computers to more naturally interact with humans (as humans do with each other) as opposed to having to communicate in a machine-like way. The relationship between AI and NLP is that NLP often uses techniques of AI to power its understanding (like deep learning). Natural language understanding is just to enable the computer to understand human speech, but natural language generation takes it a step further. It takes that computer understanding and converts it back into a natural language form that humans use and can easily understand. Some examples of modern NLP applications are predictive text generators, email spam filters, and smart assistants (Google, Siri, Alexa).

The first main approach to NLP is the rules-based approach. It is the most basic and relies on regular expressions and context free grammar productions. The problems is that human language is too complex to be encapsulated in rules, and it fails to scale well. An example is the Eliza chatbot.

The second approach to NLP is using statistical and probabilistic methods. They use standard machine learning approaches and require large amounts of data to learn from.

The last approach is using deep learning algorithms, which evolved from neural networks. These needed a lot more processing power which became available relatively recently. They are like a more advanced version of the second approach.

My personal interest in NLP comes from the power of virtual assistants. Their ability to almost have a normal conversation with humans fascinates me, and I definitely wanted to learn more. In addition, for work, there is a project that deals with this sort of domain (sentiment analysis), and I would love to have knowledge to supplement that project.