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Human Language Technologies
Overview of NLP

Natural Language Processing is the process of programming a computer to process human language. It can involve many different aspects of human language such as training a computer to listen for and recognize phrases or training a computer to recognize spam words in emails.

The relationship between Artificial Intelligence and Natural Language Processing is that Natural Language Processing lies within the umbrella of Artificial Intelligence. Hence, NLP is a branch of AI.

Natural language understanding involves the practice of understanding human language whereas natural language generation involves the practice of forming responses and replies. For example, when we talk to Siri, the process that Siri goes through to understand what we said is natural language understanding but the process in which Siri responds is natural language generation. Some modern NLP applications are OK Google, Alexa and email filters.

There are three main approaches to NLP: Rules-based approaches, statistical and probabilistic approaches and deep learning. Rules-based approaches involve the usage of rules to train a computer to deal with human language. An example of such an approach is the usage of Context Free Grammars. CFGs list production rules for sentences that the computer can follow. The rules-based approach is the oldest technique in NLP. Eliza, a chatbot therapist, is an example of a rules-based approach of NLP.

Statistical and probabilistic approaches came after rules-based approaches in the late 1980s. Mathematical approaches such as counting words and using probabilities were used. These language models are good for predictive text. Machine Learning also uses statistical and probabilistic methods in algorithms such as Naïve Bayes and Logistic Regression.

The most recent NLP approach is Deep Learning. Deep learning only became possible when enough data became available and processing power increased. Deep Learning evolved from neural networks. An example of a deep learning algorithm is recurrent neural networks.

NLP has always sounded very interesting to me because of the way that it has been applied. Applications like Alexa and OK Google are astounding to me. I have always been interested in figuring out the way those applications work and how they understand and respond to human language. I am very excited to learn more about NLP and the different methods that are used to train computers to process language.