

Overview of Natural Language Processing

Natural Language Processing is a sub-field of machine learning and artificial intelligence that specifically focuses on applying machine learning algorithms on text-based input to train computers to automatically gain and make use of information from textual inputs. Natural language understanding is the specific practice of gaining information from text, while natural language generation involved generating new text based on what is learned from previous text data sets. NLP is pretty widely used today, such as to make chat bots, translators, sentiment analysis, etc.

There are three main approaches to NLP: rule-based, traditional machine learning, and deep learning via neural networks. Rule-based approaches are the oldest. Rule-based approaches to NLP are similar to series of if-statements, where a computer takes in a text input, figures out which rule it matches, and produces an output according to that rule. Rule-based methods generally focus on pattern matching.

The second method is traditional machine learning, where general machine learning algorithms are applied. Generally, there is a training data set and a model developed that considers word types, surrounding words, etc, which is then trained on training data and tested on test set of data.

The last type is the most powerful, but also the most resource intensive to create: the deep-learning method which uses neural networks. What sets this apart is that feature engineering aspect which is common in traditional machine learning is skipped because the neural nets themselves will learn what is necessary. The data that is fed into the neural network (streams of words) is also different. The drawback is the sheer cost in resources and time.

My personal interest in NLP stems from interest in chat and text generation bots. I've always admired the fact that you can train computers to talk. I want to learn about NLP for personal reasons, so I can build my own bots. Perhaps it could cross over into my career if I impress anyone enough for them to offer me a job.