

Overview of NLP

Natural language processing is the way a machine interprets and processes either text or voice data of human language, and return its own respond through its text or voice data.

NLP is the aspect of AI that focuses on human linguistics allowing human to talk to machine. More specifically, it enables machines to understand, interpret, and manipulate human language.

Natural language understanding uses syntactic and semantic analysis of text and speech to understand the meaning of a sentence. On the other hand, Natural language generation focus on enabling computers to produce a human language text or speech response.

Modern applications of NLP include but not limited to Search Autocorrect and Autocomplete, Language Translator, Targeted Advertising, Voice Assistants, and Grammar Checker.

The first of the three main approaches to NLP is Rule-based Approach. It focuses on matching pattern or parsing data. It has low precision and high recall which is useful for specific cases. However, this approach suffers in performance when generalized. Examples of this approach includes regular expressions and context free grammars.

The second of the three main approaches to NLP is Machine Learning. It trains data and model using engineered features and inference. Engineered features includes word type, surrounding words, capitalization, plural, etc. Examples of this approach includes probabilistic modeling and likelihood maximization.

The third of the three main approaches to NLP is Neural Networks. It differs from Machine Learning in that feature engineering is skipped as the networks will learn important features. It is done by feeding streams of raw parameters into it. The specific type of neural networks used for NLP include recurrent neural networks (RNNs) and convolutional neural networks (CNNs). Examples of this approach include speech recognition and machine translation.

My personal interest about NLP involves my desire to learn about different approaches of NLP to interpret and process input data into more readable data. Thus, my hope is be able to utilize NLP for professional apply at high efficiency and effectiveness. It would be a great stepping stone for my career as a Software Engineer.