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Portfolio Assignment 0: Getting Started

NLP, or natural language processing, is the ability of a computer to understand human speech and language in a similar way to other humans.

NLP is a branch of AI. NLP is used to help computers process human speech, and since it uses machine learning to do so, it comes under AI. In the future, it will be crucial for humans to interact with AI seamlessly, as communication is very important.

While both are subsets of NLP, Natural language understanding is about a machine using grammar and context to understand the meaning of a sentence, and natural language generation is about generating text or speech that resembles human language.

Some examples of NLP in the modern word are:

1. Chatbots
2. Google assistant/Siri
3. Email filters
4. Search engine results
5. Language translation

The 1st approach to NLP is the oldest, which is the rules based approach. It relies on large libraries of human language rules to figure out what category the language that it is analyzing belongs to. If the rules don't handle the language presented to it, it will not perform well. Another issue with it is that the rules can't keep up with how complex human language is. For example, it may struggle with connotations or idioms that will fit into a rule, but not the intended one.

The 2nd approach is the statistical and probabilistic approach. In this approach, the machine learns from a library of data. It uses traditional machine learning algorithms and word frequencies to create a model with which to understand human language. A drawback is that since it trains a model using algorithms and data sets, the data sets cannot be too large and you need to have a good amount of processing power to make this approach useful.

The 3rd approach is the deep learning approach. This approach uses very large datasets and powerful processors to understand human language, which is a drawback. However, smaller scale applications with less data and processing power can be used. The algorithms that it uses are derived from neural networks. In fact, a lot of projects using this will also involve the rules-based and statistical and probabilistic approaches as well. The promise of this approach is that it may enable us to have interactions with computers that mimic human interactions, maybe even ones that pass the Turing test.

NLP is of significant interest for me, and this is perhaps because of my curiosity and excitement towards it that stems from science fiction. Well, not exactly fiction anymore, given how fast technology is moving. Recently, I watched a movie named Ex Machina, which is basically about testing an AI to see if it can pass the Turing test. WHile this is more in the realm of AI and not strictly NLP, NLP is pretty foundational to having a human-like interaction with an AI. In terms of my personal applications, I am already at the point where I have found what area

I want to work in the foreseeable future, which is blockchain development, but I may use it for personal projects to satisfy my own curiosity.