Natural language processing breaks down human language so that the grammatical structure of sentences and the meaning of words may be examined and comprehended by one another. As a result, computers are now able to read and interpret spoken or written material in the same manner that people do. Data scientists must perform a few fundamental NLP preprocessing activities before NLP technologies can understand human language. Text is divided up into smaller semantic units or single clauses through the process of tokenization. Additionally, part-of-speech tagging classifies words as nouns, verbs, adjectives, adverbs, pronouns, and other parts of speech. Additionally, words are standardized by being reduced to their root forms through the processes of stemming and lemmatization. Last but not least, stop word removal eliminates popular words that don't provide any original information.

The most common application of NLP in our current world is grammar checking. This can be seen on websites such as Grammarly or Google Docs. These tools can aid in providing content with greater clarity and engagement by correcting grammar and spelling as well as by suggesting better synonyms. They also aid in making the text more readable, which makes it feasible for you to best communicate your message. Compared to today, grammar checkers were not nearly as advanced five years ago.

Another task that NLP can perform is providing answers to reading comprehension questions. It can analyze a text given and generate responses to questions about the text itself. It allows machines to scan documents and extract meaning from the text, mimicking human readers. Reading comprehension in AI systems is improving, but it still falls short of the level of semantic understanding required to perform robustly. They work well but show signs of instability when deviating from their trained data sets, as do many deep learning algorithms. They still have a long way to go before they can compete on a human level of competence.

NLP is also capable of language modeling, which is the task of determining the probability of a given sequence of words occurring in a sentence. This process can be easily seen in

our daily lives through autocorrect and autocomplete systems on our phones, or autofill search queries on Google. Similar to search engines, autocomplete predicts what you will say based on what you type, either finishing the word or suggesting a relevant one. Furthermore, autocorrect will occasionally change words to make the overall message more understandable.

In addition, NLP can also be used for recognizing patterns in human speech, which we refer to as voice recognition. Smart assistants like Apple's Siri and Amazon's Alexa are instances of this type of usage. We can expect personal assistants like Alexa and Siri to recognize contextual cues as they improve our lives and make certain tasks easier, such as ordering items. Sometimes, they even respond humorously or answer questions about themselves. As these assistants learn more about one person, their interactions will become more personal.

As well as that, NLP can be applied to monitor social media. Companies today use various NLP techniques to analyze social media posts and learn what customers think about their products. Companies are also using social media monitoring to gain a better understanding of the issues and problems that their customers are experiencing as a result of using their products. This can help companies improve their advertisement strategies to appeal to their customers more effectively.

Finally, NLP can also be utilized for smart translation. Online translators can use NLP to translate languages more accurately and provide grammatically correct results. This is extremely useful when attempting to communicate with someone who speaks a different language. Furthermore, when translating from another language to your native tongue, tools now recognize the language based on the text entered and translate it. Simple examples of this include Google Translate, which is capable of translating any text from any language to another.