1. Natural Language Processing (NLP) is the branch of computer science which focuses on enabling computers to understand text and speech in a similar manner to human beings.
2. NLP is a subset of Artificial intelligence (AI) which focuses on human linguistics.
3. Natural Language Understanding (NLU) is related to deriving insights from provided human text or speech. On the other hand, natural language generation (NLG) refers to ascribing computer derived insights into text or speech which humans can understand.
4. Some modern applications of NLP include autocorrect/autocomplete features, language translators, social media monitors, chatbots like ChatGPT, targeted advertising and more.
5. Rules-based approaches are the oldest and arguably the simplest approach to NLP. By defining a core set of logical statements based around how to process a given input or format of input, it takes a formulaic approach to determining what the output should look like. Some examples include converting plural nouns to singular ones since there is a finite number of rules that apply to this transformation. Another famous example was Eliza which used regular expressions to determine how to speak to a user.

   Statistical and probabilistic approaches came after the rules-based approaches as the field shifted towards a more mathematical approach to understanding and generating text. By counting words and finding probabilities for words or sequences, language models become more powerful than simply relying on rules. Some examples include predictive text, small Neural Networks, Decisions Trees, and others.

   Lastly, deep learning evolved from neural networks as larger amounts of data became available for training models and GPUs and the advent of cloud computing led to an increase in processing power. Examples of deep learning include convolutional neural networks, LSTMS and other models which originated off the simple neural network model. Deep learning is expensive though so smaller scale deep learning is still used when processing large scale data is too expensive of an option.
6. I am very interested in the ability of software to generate value in the lives of everyone in society regardless of their knowledge of computer science. As such, being able to derive insights from the simplest of queries, a normal question, and then returning value to the user is something which I would love to do. I have done a handful of machine learning related science projects on the side with NumPy, Pandas and most recently, Hugging Face but I would love to learn about how NLP works at a fundamental level so that I can continue my education of the field confidently.