ABCD:

Natural Language Processing (NLP) is a subset of the field of artificial intelligence. It concerns itself with giving computers the ability to understand, process, and produce human verbal and written communication. This is similar to natural language processing; the ability to understand what the other person or party has said, and to natural language generation; the ability to speak in a manner that is understandable. Some common applications for NLP are computer translation, sentiment analysis, and chatbots.

E:

The oldest form of NLP is the rules based approach, which makes heavy use of regular expressions, context free grammars, and other similar tools to create a list of rules that the system is to follow when processing or generating. These rules could be used to determine if a sentence is grammatically correct or if a word is spelled correctly (as in, it is following the rules), or to repeat specific words or phrases that, according to the rules the system is operating on, are the most important. This functionality is seen in the therapist themed chatbot ELIZA. Unfortunately, language has many aspects that are difficult if not outright impossible to create consistent rules for. As a result, the rules based approach has issues with scaling.

Another way to approach NLP is to use the statistical and probabilistic approach. This approach requires a set of example texts (known as a corpus) that the system uses to determine what is the *most probable* meaning, next word, way to respond, whatever it may be. An example would be earlier forms of machine translation, where the translator would use the data it has gleaned from the corpus to determine what is most likely the correct way to translate a sentence from one language to another. Some limits to this however are the fact that accuracy may depend on the data in the corpus (a corpus full of casual conversations may struggle with formal business applications) and the requirement of a corpus, and the processing power needed to use it, in general.

The newest, and currently most widely hyped, approach to NLP are the deep learning approaches. These make use of the explosive increase in processing power for PCs and neural networks to allow greater performance in comprehension, generation, translation, everything. As this is the one with the most public attention, it is the one with the most active development on it. However, deep learning is not the magic solution that it may be presented as, as it still has its own drawbacks with the largest being that the amount of data and processing power required is much larger than required by statistical and probabilistic approaches.

F:

My interest in NLP comes from my interest in languages and linguistics in general. I find languages and communication fascinating, and the process of automatically translating information from one language to another, especially one that is very different from the original language, fascinating. I would like to learn more about NLP in order to find uses for it in my planned career in cybersecurity. For example using NLP to check if security vulnerabilities are being discovered and spread across non English speaking online communities.