

## Overview of NLP

### **a. Define NLP in your own words**

Natural Language Process is an interdisciplinary subfield of linguistics, computer science, and AI that focuses on interactions between humans and computers, namely how to program computers to process and analyze natural language data making it possible for computers to interact with humans

### **b. Describe the relationship between AI and NLP**

AI is a broad term that refers to simulating human intelligence in machines, while NLP is a specific application of AI that deals with the understanding and generation of human language. NLP relies on various techniques from AI such as machine learning to analyze and understand natural language.

### **c. Write a sentence or two comparing and contrasting natural language understanding and natural language generation.**

Natural Language Understanding (NLU) is the ability of a computer to understand the meaning of human language while Natural Language Generation (NLG) is the ability of computer to generate human-like language. Both are important in building systems that can communicate with a human

### **d. List some examples of modern NLP applications.**

1. Amazon's Alexa
2. Text-To-Speech technology
3. Chatbots
4. ChatGPT

### **e. write 3 paragraphs describing each of the 3 main approaches to NLP, and list examples of each approach.**

The three main approaches to NLP are the Rules-based approaches, Statistical and probabilistic approaches, and Deep learning. A rules-based approach in NLP involves the use of predefined sets of rules to analyze and understand Natural language. Some examples of this approach are converting plural forms of words to singular ones. Another rules-based approach involves context free grammar, which lists production rules for sentences. Autocorrect also uses a combination of the rules-based approach and machine learning.

The statistical and probabilistic approach involves simply counting words and finding the probability of words and sequences of words which leads to useful language models. These models can be part of machine translation systems. These models can also be used for predictive text.

Deep Learning approaches in NLP involve neural networks, which are a type of ML models. Deep Learning approaches have been used in NLP tasks such as Language translation, text summarization and speech recognition.

**f. write a paragraph describing your personal interest in NLP and whether/how you would like to learn more about NLP for personal projects and/or professional application**

I hadn't had any interest in NLP per se until I started using chatGPT. I think the program being able to understand what I am telling it and generating a response even superior to one a human would give me is awesome; thus my interest has peaked and I would love to work on ML and NLP project and both a person and professional capacity

**g.**