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CS4395-001
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Portfolio Assignment 0

a. Define NLP in your own words

Natural language processing is one of the computer sciences fields that comprehend how people communicate in natural language and how to make it possible for machines to interpret and respond to that communication. Speech recognition, natural language understanding, text analysis, and machine translation are all included.

b. Describe the relationship between AI and NLP

AI and NLP have a lot in common. NLP is part of the larger field of study known as AI. Natural Language Processing (NLP) is a subfield of artificial intelligence that focuses on making it possible for machines to comprehend and generate human language. Natural language processing (NLP) technologies enable AI systems to comprehend, and process spoken or written word inputs. NLP-based AI systems can then use the data they get to do things like translate languages, classify text, answer questions, and more.

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

Working with natural language is involved in both natural language understanding and natural language generation, but the focus of each is different. Natural language generation is the process of creating natural language, whereas natural language understanding is the process of interpreting the meaning of natural language.

d. List some examples of modern NLP applications

1. Speech Recognition: A type of NLP application that uses advanced algorithms to interpret spoken words and convert them into text.
2. Text Summarization: A type of NLP application that uses natural language processing to generate summaries of large amounts of text.
3. Chatbots: A type of NLP application that uses natural language processing to generate automated replies to users' inquiries.

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

1. Symbolic Methods: Natural language processing (NLP) methods that make use of symbolic representations to represent meaning and context are known as symbolic approaches. Rules, ontologies, and semantic networks are used in these methods to decipher a language's meaning. Rule-based systems, logic-based systems, and symbolic AI are all examples of symbolic approaches.

2. Statistical Methodologies: Statistical approaches to NLP interpret and analyze language using statistical methods and mathematical models. In order to comprehend the context and meaning of language, these strategies make use of methods like deep learning and machine learning. supervised learning, unsupervised learning, and reinforcement learning are all examples of statistical approaches.

3. Using Neural Networks: Artificial neural networks are used in neural network approaches to NLP to interpret and analyze language. Neural networks are used in these methods to learn from data and recognize language patterns. Convolutional neural networks, recurrent neural networks, and long short-term memory networks are all examples of approaches based on neural networks.

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

Natural language processing piques my interest because I'm intrigued by the possibility of using computers to comprehend, interpret, and generate human language. NLP is a great way to explore my passion for understanding how language works. I would like more information about NLP for personal and professional use. I'd like to learn how to create models and algorithms for processing data in natural language, how to interpret and analyze the results, and how to put this knowledge to use in the creation of useful applications. I'm likewise keen on investigating how NLP can be utilized to fabricate intuitive frameworks that can participate in a characteristic exchange with people. I'm eager to learn more about NLP because I believe it can be a useful tool for both personal and professional projects.

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