Kyle Chan kxc180021

Overview of NLP

a. NLP, or Natural Language Processing is using a program to understand written and spoken human language. It takes the language processed to perform corresponding actions.
b. NLP is a branch of AI, in which they're programs that aim to understand humans. AI involves systems that attempt to mimic cognitive abilities, and to that extent, so does NLP in trying to understand the purpose and meaning of spoken and written language.
c. Natural language understanding (NLU) is machine reading comprehension through grammar and context and understanding the correct meaning behind a sentence. Natural language generation (NLG) is a machine generating and constructing text in a language based on a dataset.
d. Some examples of NLP today include email filters, smart assistants, and predictive texts
e. There are three approaches to NLP: rule-based, "traditional machine learning, and neural networks.
    a. Rule-based NLP implements 'rules' to categorize language during analysis. Several implementations include using context-free grammar, regular expressions, and the utilization of large human language libraries. However, the more comprehensive a program aims to be, the more complex the categorization may become, making rule-based NLP unscalable to large degrees. Examples of rule-based NLP would be the Eliza chat-bot and spell check.
    b. Traditional machine learning NLP relies on statistical inferences and probabilities to analyze human language. The use of word frequencies and machine learning algorithms are common examples of this, and they demonstrate that they need moderate amounts of data and good processing power. Examples of traditional machine learning NLP would be predictive text and survey analysis (sentiment analysis and feedback analysis).
    c. Deep learning and the use of neural networks for NLP require a large amount of data and powerful processing power. Unlike the previous two, deep learning approaches result in improved language translation, language generation, and language understanding among others. Examples of neural networks in NLP would be customer service automation and smart assistants.
f. NLP has interested me for a while during my time studying as an undergraduate. The creation of systems that understand the intent behind a sentence fascinates me, and I want to be able to understand the process to making these programs.