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CS 4395.001

Assignment 1

A. I did not know much about what is NLP when registering for this class, however, after the first lecture and reading the notes, I understand that Natural Language Processing is a type of AI that keeps evolving each day. In other words, is the creation of a machine that imitates how humans can communicate through text or spoken words.

B. The relation between AI and NPL is that NPL is a part of a branch of AI.

C. The notes describe *natural language understanding* and *natural language generation* as they are both two things that are happening in a human-to-human dialog, however, *natural language understanding* is the meaning that both humans understand each other, whereas *natural language generation* is the formation of spoken responses.

D. A few examples that are modern NLP applications are *auto-correct, Speech Recognition* and *text summarization.*

E. The three main approaches to learning from words, sentences, and documentation are *Rules-based approaches, Statistical, and probabilistic approaches, and Deep learning*. One of the oldest techniques of *Natural Language Processing* is *the Rules-based approach,* one rule-based approach example is context-free grammar, which lists a number of rules for a sentence and checks if the sentence is grammatically correct. Another example given is Eliza which was created in the 1960s where it did mimic a talk therapist. *Rules-based approaches* can be useful to solve many processing problems however, they were difficult to scale up for the reason that human language is complex and keeps evolving. *Statistical and probabilistic* approaches were dominated until the 1980s, when mathematical approaches to the text were developed, such as counting words and being able to find the probability of words and sequences of words which led to useful language models. The models can be used in a translation system, where it translates words or sentences from one language to another. These methods can also be found in machine learning algorithms since they learn by statistical and probabilistic methods the notes state that these approaches work great when there is a moderate or large amount of data available for training which can also outperform deep learning algorithms on smaller data sets. Last, but not least, *the Deep learning* technique has involved neural networks when there is a huge amount of data that becomes available and increased through could computing. The goal of the *Deep learning* technique is to make more human-sounding applications. techniques are coming out every day with many

exciting results as the notes state, however, not everyone can have access to petabytes. Many NPL projects use all three techniques which need to be understood.

F. After reading more articles and the notes provided to us, I have got more interest In learning how NLP function and the different project that has been using NLP to this day. I would like to know more about the subject by reading as well as hopefully being able to create my own application that uses NLP one day.