Exam

1.What is Parsing in the context of NLP?

**Ans**: Parsing in NLP is the process of determining the syntactic structure of a text by analyzing its constituent words based on an underlying grammar (of the language).

See this example grammar below, where each line indicates a rule of the grammar to be applied to an example sentence “Tom ate an apple”.

Proper noun= Tom

Noun=apple

Verb=ate

Determiner=an

2.What is Regular Grammar?

The purpose of a regular grammar is to specify how to form grammatically correct strings in the language the grammar represents

A regular grammar is a mathematical object, G, with four components, G = (N, Σ, P, S), where.

N is a nonempty, finite set of nonterminal symbols,

Σ is a finite set of terminal symbols , or alphabet, symbols,

P is a set of grammar rules, each of one having one of the forms.

A → aB.

A → a

A → ε, for A, B ∈ N, a ∈ Σ, and ε the empty string, and

S ∈ N is the start symbol

3.What is the difference between NLG and NLU?

|  |  |
| --- | --- |
| **Natural Language Understanding (NLU)** | **Natural Language Generation (NLG)** |
| NLU is the process of reading and interpreting language. | NLG is the process of writing or generating language. |
| It produces non-linguistic outputs from natural language inputs. | It produces constructing natural language outputs from non-linguistic inputs. |

4.What is Pragmatic Analysis?

Pragmatic Analysis helps you to discover the intended effect by applying a set of rules that characterize cooperative dialogues. It deals with deriving meaningful use of language in various situations.

For Example: "Open the door" is interpreted as a request instead of an order.

5. What are unigrams, bigrams, trigrams, and n-grams in NLP?

n-grams in NLP are basically a set of co-occurring words within a given window and when computing the n-grams you typically move one word forward (although you can move X words forward in more advanced scenarios).

For example, for the sentence “The cow jumps over the moon”. If N=2 (known as bigrams), then the 2 grams would be:

* the cow
* cow jumps
* jumps over
* over the
* the moon

6.What are the steps involved in solving an NLP problem?

* Step 1: Import Libraries
* Step 1: Gather the data.
* Step 2: Clean the data.
* Step 3: Find a good data representation.
* Step 4: Classification of data.
* Step 5: Inspection of data.
* Step 6: Accounting for vocabulary structure- o help our model focus more on meaningful words
* Step 7: Leveraging semantics.
* Step 8: Leveraging syntax using end-to-end approaches.

7.What is precision and recall and f1 score?

Precision: It tells how much of the system summary was in fact needed or relevant

Recall: It refers how much of the reference summary and the system summary is overlapping.

f1 score: F1 Score is the weighted average of Precision and Recall. In other words, an F1-score (from 0 to 9, 0 being lowest and 9 being the highest) is a mean of an individual's performance, based on two factors i.e. precision and recall.

8.How to tokenize a sentence using the nltk package?

Ans:

* Import the “word\_tokenize” from the “nltk. tokenize”.
* Load the text into a variable.
* Use the “word\_tokenize” function for the variable.
* Read the tokenization result.

**e.g**. import nltk

from nltk import word\_tokenize()

s=”I am a student”

sentence=nltk.tokenize.word\_tokenize(s)

print(sentence)

9.Explain Stemming with the help of an example?

Ans:

Stemming is used to normalize words into its base form or root form.

For Example**,** intelligence, intelligent, and intelligently, all these words are originated with a single root word "intelligen." In English, the word "intelligen" do not have any meaning.

10.Explain Lemmatization with the help of an example?

Ans: Lemmatization is quite similar to the Stamming. The main difference between Stemming and lemmatization is that it produces the root word, which has a meaning.

For example: In lemmatization, the words intelligence, intelligent, and intelligently has a root word intelligent, which has a meaning.

11.What is Parts-of-speech Tagging?

Ans: It is a process of converting a sentence to forms – list of words, list of tuples (where each tuple is having a form *(word, tag)*). The tag in case of is a part-of-speech tag, and signifies whether the word is a noun, adjective, verb, and so on.

Tagging

tagging.tag(['Hello', 'Geeks'])

[('Hello', 'NN'), ('Geeks', 'NN')]