NLP Question Bank

1. What is natural language processing? Discuss the various steps involved in NLP.
2. What are the challenges and ambiguities in NLP design?
3. Explain different levels of NLP
4. Describe Generic NLP system with a diagram
5. For each sentence, identify whether the different meanings arise from structural ambiguity, semantic ambiguity or pragmatic ambiguity?
6. Time flies like an arrow
7. He crushed the key to my heart
8. Explain perplexity of any language mode
9. What is Natural Language Processing? Discuss with some applications.
10. Write short noes on Bayes theorem
11. Define random variables with example
12. Explain derivational and inflectional morphology
13. What is the role of FSA in morphological analysis
14. Identify the morphological type (Noun phrase, Verb Phrase, Adjective Phrase)

of following sentence segments

1. important to Bill
2. looked up the tree
3. Write a note on N gram language model.
4. Differentiate between bigram and trigram
5. What is stemming? Explain Porter stemming algorithm in detail?
6. Write short notes on Penn Tree Bank
7. What is Markov process? How HMM is related with Markov Process?
8. What do you mean by transmission probability matrix and emission probability matrix. Explain with one example
9. What are the limitations of Hidden Markov Model?
10. Explain POS tagging with example
11. Distinguish between semantics, pragmatics and discourse
12. Describe open class words and closed class words with examples
13. Differentiate between different morphemes, with examples.
14. State the difference between hypernymy and hyponymy and give an example of each
15. State the difference between homonymy and polysemy and give an example of each
16. Explain lexicon, lexeme and the different types of relations that hold between

Lexemes

1. Discuss various relations among the word senses.
2. What is meant by Lexicon? How is it useful in NLP?
3. What is meant by the semantics of a natural language, and how this differs from the pragmatics?
4. Explain the difference of discourse structure from other reference mechanisms
5. Discuss reference resolution problem in detail
6. What are Syntactic and Semantic Constraints on co reference?
7. What do you mean by word sense disambiguation (WSD)? Discuss dictionary based approach for WSD.
8. Write short notes on
   1. Sentiment Analysis
   2. Word net
9. Explain direct machine translation
10. Explain text summarization
11. Explain NER
12. Explain Question answer system
13. Explain text categorization in NLP
14. Explain the architecture of an Information Retrieval system with a neat diagram.
15. How do you find the Cosine distance between the documents?
16. How HMM is used for POS tagging? Explain in detail.
17. Consider the following corpus  
    <s> I tell you to sleep and rest </s>  
    <s> I would like to sleep for an hour </s>  
    <s> Sleep helps one to relax </s>  
    List all possible bigrams. Compute conditional probabilities and predict  
    the next word for the word “to”.
18. Using the given training corpus, Identify the tags for the sentence " Can Justin watch Martin" using HMM

Table

Description automatically generated

Using the given training corpus, Identify the tags for the sentence " The park is a book" using HMM

Table

Description automatically generated

1. Calculate the transmission and emission probabilities for the set of sentences below

• Mary Jane can see Will

• Spot will see Mary

• Will Jane spot Mary?

• Mary will pat Spot

Tag the sentence “Will can spot Mary’” using Viterbi algorithm.

1. f(x,y)=ke-(x+y)   0 ≤ x,y ≤ ∞. Find k  and marginal densities of x and y.
2. Define mean and variance of a random variable
3. Explain FSA for nouns and verbs. Also Design a Finite State Automata (FSA) for the words of English numbers 1-99.