

1) Explain Rule based POS tagging (5 marks)

Ans -

Rule-based Part-of-Speech (Pos) tagging:-

• Rule-based Part-of-Speech tagging uses ENGTWOL tagger which is based on a two-stage architecture. The 1<sup>st</sup> stage uses a dictionary to assign each word a list of potential parts of speech. The 2<sup>nd</sup> stage uses large lists of hand-written disambiguation rules to winnow down this list to single Pos for ~~to~~ each word.

• The ENGTWOL lexicon is based on the two-level morphology, & has about 56,000 entries for English word stems, counting a word with multiple Pos.

• If the word has more than one possible tag, then rule-based tagger uses hand-written rules to identify the correct tag.

• Rule-Based POS tagging have properties like:-

(i) These taggers are knowledge-driven tagger.

(ii) The rule in Rule-based POS tagging are build manually.

(iii) The information is coded in the form of rules.

(2)

Explain Generative Model. (5marks)

Ans →

Generative Model:-

- People all around the world speak so many different languages, but Computer System or any other computerized Machine only understand binary language i.e 0's & 1's.
- The process that converts human language to computer understandable is known as Natural Language Processing (NLP). Various diversified model have been suggested ~~for~~ so far, but Generative predictive model which can optimize depending upon the nature of the problem.
- The Generative model is a single platform for diversified area of NLP that can address specific problem relating to read text, hear speech interpret it.
- Generative model measure sentiment & determine which part are important this is achieved by process of eliminate once the relevant components are identified.
- An example of Generative model might be one that is trained on collections of image from real world in order to generate similar image.

optional

③ Explain CYK Algorithm. (5 marks)

Ans →

CYK Algorithm :-

- CYK means Cocke - Younger - Kasami.

It is one of the earliest recognition & parsing algorithm

- The Standard CYK can only recognize languages defined by context-free grammars in Chomsky Normal Form (CNF).

- It is also possible to extend the CYK algorithm to handle some grammar which are not in CFG.

- Based on a "dynamic Programming" approach.

- (i) Build Solutions compositionally from Sub-Solutions.

- (ii) It uses the grammar directly.

Algorithm :-

Begin

for ( $j=1$  to  $n$  do)

$v_{ij} = \{A \rightarrow a \text{ is a production where } A^{\text{1st}}$  symbol of  $a$  is  $x\}$

    for ( $j=2$  to  $n$  do)

        for ( $i=1$  to  $n-j+1$  do)

            Begin

$v_{ij} = \emptyset$

                for  $k=2$  to  $j-1$  do

$v_{ij} = v_{ij} \cup \{A \rightarrow BC \text{ is a Production}\}$

                End

            End

- ④ Write short notes on (i) Pragmatic Analysis  
(ii) Discourse Analysis (5 marks)

Ans →

### (i) Pragmatic Analysis :-

- Pragmatic analysis refers to a set of linguistic & logical tool with which analyst develops systematic accounts of discursive political interaction.
- Pragmatic analysis deals with overall communicative & social contents & its effect on interpretation.
- In pragmatic analysis the main focus is always on what was said is reinterpreted on what is intended.
- Pragmatic analysis help user to discover this intoned effect by applying a set of rules that characterize co-operative dialogues.
- Eg :- "close the window?" should be interpreted as a request instead of an order,

### (ii) Discourse Analysis :-

- Discourse analysis is a research method for studying written or spoken language in relation to its social context
- Discourse analysis aims to understand how language is used in real life situation.
- Discourse analysis may be defined as the process of determining contextual information that is useful for performing other tasks such as ~~Anaphora~~ Anaphora Resolution (AR).

Ques. Explain Reference Phenomena .(5 mark)

Ans→

### Reference Phenomena :-

- The range of referential phenomena offered by Natural Language is quite extensive five types of referring expression have been covered, indefinite noun phrase, definite noun phrase, Pronouns, demonstrative & name.
- Additionally it is important to note the three type of reference which complicate the reference resolution problem discontinuous sets & generics,

### Types of Reference Expression:-

#### (i) Indefinite Noun phrases:-

It bring unfamiliar entities to the conversation environment.

#### (ii) Definite Noun Phrases :-

An entity identifiable by the reader because it is either:-

(a) already mentioned previously

(b) The object is unique .

#### (iii) Pronouns:-

It refers to entities that were introduced fairly recently. Nominative (he, she, it, they, etc).

#### (iv) Names :-

Names are prevalent types of referring & include name of person organization & places .

(5 marks)

⑥ What is Question-Answer. Explain challenges in the development of question answering system

Ans → Question Answering System :-

• Question answering system is a branch of learning of information retrieval & NLP, which focuses on building system that automatically answer question passed by users in a natural language.

issues/challenges in development of question answering system :-

(i) Lexical gap :- A language refers to the varieties of way that the same sentiment can be expressed.

(ii) Ambiguity :- Languages are inherently ambiguous. At every state of NLP, a language ambiguous is there even for human ambiguity in language make it difficult to understand the sentence.

(iii) Complex Data :- A knowledge that has given to question - answering system serve as its brain & heart. It fails if there any inconsistency.

(iv) Complex Queries :- It serve same as complex data.

(v) Incorrect data :- It depends on the creator & designer of question answering - system.

- Q. what is sentimental analysis. Explain types of ~~sysn~~ sentimental analysis.

Ans →

### Sentimental Analysis:-

- Sentimental Analysis is a type of market analysis that include the use of text analysis, biometrics, NLP, & computational linguistics to recognize the state of said information.

- Sentimental analysis is the process of determining whether a piece of content (email, social media post, or article) is negative, Positive, or Neutral.

### Types of Sentimental Analysis:-

#### (i) Fine-grained Sentiment:-

- Fine-grained sentimental analysis gives us an understanding of the feedback received from customers.

- We can get precise result in term of polarity of the input.

#### (ii) Emotion Detection Sentiment Analysis:-

- This is an sophisticated way of identifying the emotion in a piece of text. Lexicons & machine learning are used to determine the sentiment.

#### (iii) Aspect - based :-

- This type of sentimental analysis is usually for one aspect of service or product. For example a company sells TV uses this type of sentimental analysis

for the aspect such as brightness, sound etc.

### (iv) Intent Analysis:-

This is a deeper understanding of the intention of the customer.

For example :- a company can predict if a customer intends to use the product or not.

This means that intention of a particular customer can be tracked, forming a pattern, & then used for marketing & advertising.