CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

17CS741

Seventh Semester B.E. Degree Examination, June/July 2023
Natural Language Processing

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Illustrate with suitable examples the different levels on NLP. **(08 Marks)**
   b. List and explain the challenges of Natural Language Processing. **(06 Marks)**
   c. Explain the role of transformational rules in transformational grammar with the help of an example. **(06 Marks)**

OR

2 a. Explain Statistical Language Model and find the probability of the test sentence
   P(they play in a big garden) in the following training set using bi-gram model
   <S>There is a big garden
      Children play in the garden
      They play inside beautiful garden </S> **(06 Marks)**
   b. Explain applications of Natural Language Processing. **(06 Marks)**
   c. List the problems associated with n-gram model. Explain how these problems are handled. **(08 Marks)**

Module-2

3 a. Write minimum edit distance algorithm and compute minimum edit distance for tutor and tumour. **(07 Marks)**
   b. Explain Earley parsing algorithm. **(07 Marks)**
   c. Explain Rule based Tagger. **(06 Marks)**

OR

4 a. Explain top-down parser and bottom-up parser with a suitable example. **(08 Marks)**
   b. Interpret Regular expressions and Finite State Automata with an example for each. **(08 Marks)**
   c. Explain Cocke-Younger-Kasami (CYK) algorithm. **(04 Marks)**

Module-3

5 a. Analyze the sentence "State Bank of India is located just near the bank of river Ganger". Using your understanding on semantic analysis. **(08 Marks)**
   b. Analyze the sentence "This tree is illustrating the dependency relation" Using your understanding on synthetic Analysis. **(12 Marks)**

OR

6 a. Apply unigram bigram, and trigram models for the below sentences :
   i)   Manchester United is a club in English premiere league
   ii) I am looking for a good place to eat Breakfast.
   iii) When are we going to be free from COVID
   iv) Who is going to be a president of Australia
   v)   Syntactic analysis is a challenging process in NLP **(15 Marks)**
   b. Explain parts of speech tagging with an example. **(05 Marks)**

Module-4

7 a. Explain the functioning of Word Matching Feedback Systems. (08 Marks)
   b. Discuss iSTART system and their modules. (08 Marks)
   c. Illustrate Topic Models (TM) Feedback system. (04 Marks)

OR

8 a. Define:
      i)   Cohesion
      ii) Coh- Metrix
      iii) Latent Semantic Analysis. (10 Marks)
   b. Write a note on various approaches to analyzing texts. (10 Marks)

Module-5

9 Explain in details the classical model of information retrieval.
      i)   Boolean Model (05 Marks)
      ii) Vector Space Model. (15 Marks)

OR

10 Explain in details of the classical model of information Retrieval.
      i)   Set model (05 Marks)
      ii) Probabilistic model (15 Marks)

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