



SRI KRISHNA INSTITUTE OF TECHNOLOGY

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#57, Chimney Hills, Hesaraghatta Main Road, Chikkabanavara Post, Bengaluru- 560090

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

NATURAL LANGUAGE PROCESSING – QUESTION BANK

Semester:6 Course Code : BAI601

MODULE-1

1	What is Natural Language Processing (NLP), and how does it bridge the gap between human language and computers?	L2	CO1
2	Briefly explain the origins of NLP and its evolution over time.	L2	CO1
3	What are the key challenges faced in NLP? Provide examples.	L2	CO1
4	How is language modeling used in NLP? Explain with an example	L2	CO1
5	What is the role of grammar in NLP, and how does it impact language processing?	L2	CO1
6	Given a sample sentence, construct unigram and bigram models using probability calculations.	L3	CO1
7	How does the Paninian framework contribute to NLP? Explain with a simple example.	L3	CO1
8	Describe the Karaka theory and illustrate its application in sentence analysis.	L3	CO1
9	Discuss how NLP is applied in processing Indian languages, highlighting specific challenges.	L3	CO1



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10	Choose an NLP application (e.g., speech recognition, machine translation) and explain how language modeling plays a role in it.	L3	CO1
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MODULE-2

1	What are regular expressions, and how are they used in NLP? Provide an example.	L2	CO2
2	Explain how finite-state automata (FSA) can be used for word-level analysis in NLP.	L2	CO2
3	What is morphological parsing, and why is it important in NLP?	L2	CO2
4	Describe different types of spelling errors and how they can be detected and corrected.	L2	CO2
5	What are part-of-speech (POS) tags? Give examples of common word classes and their significance.	L2	CO2
6	Given a set of words, construct a regular expression to match plural nouns.	L3	CO2
7	Design a finite-state automaton (FSA) to recognize a simple set of words in English.	L3	CO2
8	Perform morphological parsing on the word "unhappiness" and describe the process.	L3	CO2
9	Given the sentence "The cat sat on the mat" , draw its syntactic structure using context-free grammar (CFG).	L3	CO2
10	Apply the CYK parsing algorithm to check if the sentence "a boy sees a dog" belongs to a given CFG.	L1	CO2



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MODULE-3

1	What is the Naïve Bayes classifier, and why is it called "naïve"?	L2	CO3
2	Explain the mathematical formulation of the Naïve Bayes classifier.	L2	CO3
3	How is the Naïve Bayes classifier trained for text classification?	L2	CO3
4	What are the key assumptions made in Naïve Bayes, and how do they affect its performance?	L2	CO3
5	How does Naïve Bayes function as a language model?	L2	CO3
6	Given a small dataset of text samples and their classes, demonstrate how to apply Naïve Bayes classification step by step.	L3	CO3
7	Given a set of positive and negative movie reviews, outline how to train a Naïve Bayes classifier for sentiment classification.	L3	CO3
8	Describe a scenario where Naïve Bayes is used for spam detection and explain the steps involved.	L3	CO3
9	Compare Naïve Bayes with another text classification technique (e.g., Support Vector Machines or Neural Networks) in terms of efficiency and accuracy.	L3	CO3
10	Given a set of positive and negative movie reviews, outline how to train a Naïve Bayes classifier for sentiment classification.	L3	CO3



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MODULE-4

1	What are the key design features of an Information Retrieval (IR) system?	L2	CO4
2	Explain the classical models of Information Retrieval with examples.	L2	CO4
3	How do non-classical and alternative models of Information Retrieval differ from classical models?	L2	CO4
4	Describe the Cluster model, Fuzzy model, and LSTM model in Information Retrieval.	L2	CO4
5	What are the major challenges in Information Retrieval?	L2	CO4
6	Given a dataset of documents, outline the steps to build a simple Information Retrieval system.	L3	CO4
7	How can WordNet be used to improve search results in an IR system? Provide an example.	L3	CO4
8	Apply stemming to the words "running," "flies," and "better" and explain the results.	L3	CO4
9	Given a sentence, identify the parts of speech (POS) using a POS tagging approach.	L3	CO4
10	How can research corpora be used to train an NLP-based Information Retrieval system?	L3	CO4



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MODULE-5

1	What are language divergences, and how do they impact machine translation?	L2	CO5
2	Explain the concept of language typology and its relevance in MT.	L2	CO5
3	What is the Encoder-Decoder model, and how does it work in machine translation?	L2	CO5
4	How does translating in low-resource situations differ from translating high-resource languages?	L2	CO5
5	What are the key methods used for evaluating the quality of machine translation?	L2	CO5
6	Given an English sentence, describe how an Encoder-Decoder model would process it for translation into French.	L3	CO5
7	How can attention mechanisms improve the performance of an Encoder-Decoder model in translation tasks?	L3	CO5
8	Identify common sources of bias in machine translation systems and suggest ways to mitigate them.	L3	CO5
9	Given a set of machine-translated sentences and their human-translated references, apply BLEU score evaluation to measure translation quality.	L3	CO5
10	Discuss an ethical issue in machine translation and propose a solution to address it.	L3	CO5



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