



Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

AY: 2024-25

Class:	BE-AI/DS	Semester:	VII
Course Code:		Course Name:	Natural Language processing

Name of Student:	Mokshad Ketan Sankhe
Roll No. :	67
Assignment No.:	01
Title of Assignment:	
Date of Submission:	
Date of Correction:	

Evaluation

Performance Indicator	Max. Marks	Marks Obtained
Demonstrated knowledge	5	
Legibility	3	
Completeness and timely submission	2	
Total	10	

Performance Indicator	Exceed Expectations (EE)	Meet Expectations (ME)	Below Expectations (BE)
Demonstrated Knowledge	5	3-4	1-2
Legibility	3	2	1
Completeness and Timely submission	2	1	0

Checked by

Name of Faculty :

Signature :

Date :

NLP - Assignment 1

Q1) Illustrate ambiguity in Natural Language processing and how it has been affecting english language for natural linguistic understanding.

→ Ambiguity in NLP is a significant challenge that effects the understanding and interpretation of human language by computers. The different types of ambiguity are :-

a) Lexical Ambiguity:- This occurs when a single word has multiple meanings. For example, the word silver can be noun (a metal), a adjective (color) or a verb (to make something silvery). Resolving this often involves identifying the part of speech through context, known as lexical category disambiguation or Parts-of-speech tagging.

b) Syntactic Ambiguity:- This arises when a sentence can be parsed in multiple ways due to its structure. For example, "The man saw the girl with the telescope" can either the man used telescope to see girl or he saw a girl who had a telescope.

c) Semantic Ambiguity:- It occurs when the meaning of the words themselves can be interpreted in different ways. For example, "The car hit the pole while it was moving" can mean either the car was moving when it hit the pole, or the pole was moving when the car hit it.

d) Discourse Ambiguity:- This involves linguistic units and requires shared knowledge for interpretation. For instance, "The horse ran up the hill. It was

steep. "It soon got tired" contains ambiguity about whether "it" refers to the hill or horse. Context & world knowledge usually help in resolving such ambiguity.

e) **Pragmatic Ambiguity**:- It arises from context, where the same phrase can have multiple interpretations based on user intention, sentiment or beliefs. For example, "I love you too" can be interpreted in various way depending on context, such as reciprocating love, acknowledging someone else's love or expressing love for someone else as well.

Q2) write a note on challenges of NLP & their impact on application respectively.

→ The primary challenges in NLP include:-

a) **contextual words and phrases and Homonyms**:-

- challenge: words with multiple meaning & context-dependent phrases can confuse NLP systems.
- Impact: misinterpretation leads to incorrect outputs in applications like chatbots & translation services.

b) **Synonyms**:-

- challenges:- Different words with similar meanings complicate language understanding and generation.
- Impact:- Search engines & recommendation systems may struggle to provide accurate results without recognizing synonym relationship.

c) Irony and sarcasm:

- challenge: Detecting irony and sarcasm is difficult due to reliance on subtle cues.
- Impact: sentiment analysis tools may misclassify sentiment, leading to inaccurate social media monitoring or customer feedback analysis.

d) Ambiguity:-

- challenge: Ambiguity in language, where a single phrase can have multiple interpretations, complicates processing.
- Impact: Application requiring precise understanding such as legal document analysis or medical record interpretation, may face issues.

e) Errors in Text or speech:

- challenge:- spelling mistakes, grammatical errors, & speech recognition inaccuracies disrupt NLP processes.
- Impact: Automated transcription services, text prediction & language translation can be adversely affected by such errors.

f) Domain-specific language:-

- challenge: Specialized jargon & terminology in ~~for~~ fields like law, medicine or engineering requires domain-specific knowledge.
- Impact:- NLP applications in these fields must be tailored & trained extensively to handle unique language.

g) Lack of Research & Development:

- challenges: continuous advancement in NLP require significant research & development, which may not be equally distributed globally.
- Impact: Innovations in NLP may be slow to reach less developed regions, affecting the availability & quality of applications.