



# Vivekanand Education Society's Institute Of Technology

Approved by AICTE & Affiliation to University of Mumbai

## Artificial Intelligence and Data Science Department Natural Language Processing / Odd Sem 2023-24 / Experiment 4

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### Title of Experiment :

Morphological Analysis and Word Generation for a Given Text

### Problem Statement :

The problem at hand involves performing morphological analysis on a given text and generating new words based on the morphemes and linguistic rules found in the text. The goal is to understand and implement a process that breaks down words into morphemes and uses them to create novel words.

### Description / Theory :

Morphological analysis involves breaking down words into their morphemes, which are the smallest units of meaning in a language. Morphemes can be prefixes, suffixes, roots, etc. Understanding morphemes helps in analyzing the structure and meaning of words in a text. Utilizing morphemes, we can generate new words by combining them according to linguistic rules.

### Flowchart :

1. Input a text for morphological analysis.
2. Tokenize the text into words and sentences.
3. Perform morphological analysis to identify morphemes within each word.
4. Create a database of morphemes and their meanings.
5. Utilize linguistic rules to generate new words by combining morphemes.
6. Output the generated words.

**Program:**

```
import random

# Morpheme database (suffixes and prefixes)
suffixes = ['ly', 'ing', 'ed', 'es']
prefixes = ['un', 're', 'pre', 'dis']

# Function to perform morphological analysis and generate new words
def generate_word(morpheme):
    # Randomly choose a prefix and a suffix
    prefix = random.choice(prefixes)
    suffix = random.choice(suffixes)

    # Combine morpheme, prefix, and suffix to generate a new word
    new_word = prefix + morpheme + suffix

    return new_word

# Sample morpheme for analysis and word generation
sample_morpheme = "play"

# Generate a word using the given morpheme
generated_word = generate_word(sample_morpheme)

# Display the generated word
print(f"Morpheme: {sample_morpheme}")
print(f"Generated Word: {generated_word}")
```

**Output:**

```
Morpheme: play
Generated Word: preplayly
```

**Results and Discussions :**

The results will include the morphemes identified in the given text, their meanings, and the newly generated words using linguistic rules and the identified morphemes. The discussion will focus on the accuracy of morpheme identification, the effectiveness of linguistic rules in generating words, and potential improvements to the approach.



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### **Conclusion:**

In conclusion, morphological analysis provides valuable insights into the structure and meaning of words. By understanding morphemes and applying linguistic rules, we can generate new words. This experiment enhances our understanding of language morphology and lays the foundation for applications such as word generation, language processing, and computational linguistics.

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