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Title of Experiment :

Word Cloud Generation in Natural Language Processing (NLP)

Problem Statement :

The problem is to generate a word cloud from a given text or set of texts, representing the frequency of words visually. The objective is to create an appealing and informative visualization that showcases the most prominent words in the input text.

Description / Theory :

A word cloud is a visual representation of text data, where words are displayed in varying sizes and colors based on their frequency or importance. Commonly used words are usually displayed in a larger font to emphasize their occurrence. The creation of word clouds involves text preprocessing, word frequency calculation, and graphical representation to generate an informative and aesthetically pleasing visualization.

Flowchart :

1. Input the text data.
2. Preprocess the text (tokenization, lowercasing, stopwords removal, etc.).
3. Calculate the frequency of each word.
4. Determine the font size and color for each word based on its frequency.
5. Generate the word cloud using the layout algorithm.
6. Display the word cloud.

Program:

```
import matplotlib.pyplot as plt
from wordcloud import WordCloud

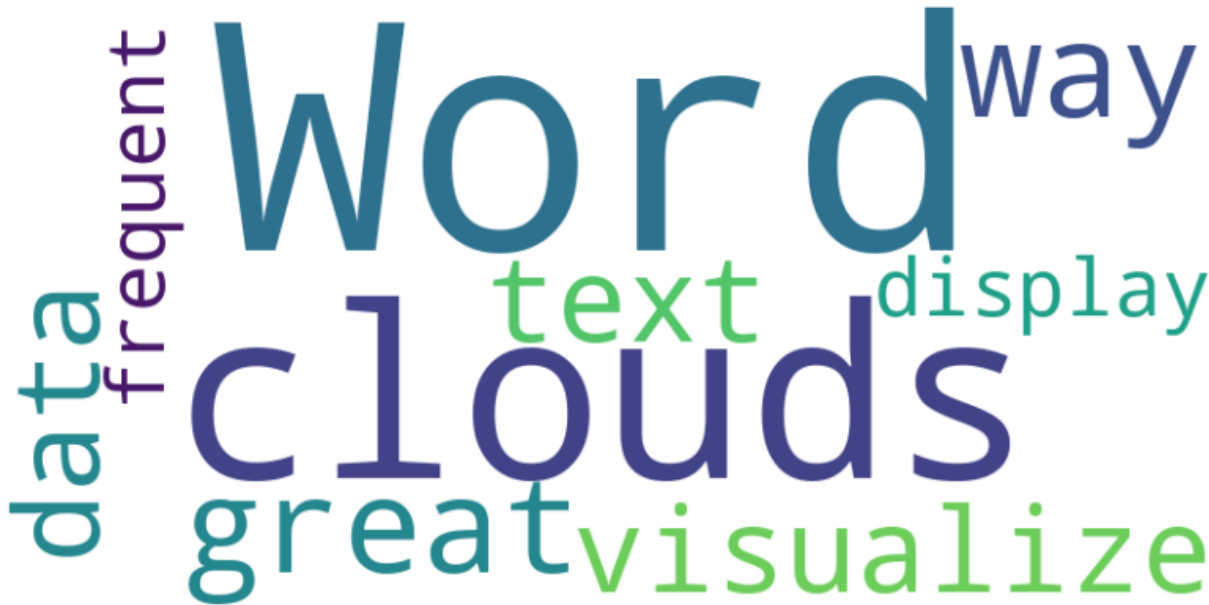
# Sample text for word cloud
sample_text = "Word clouds are a great way to visualize text data and
display the most frequent words."

# Generate the word cloud
```



```
wordcloud = WordCloud(width=800, height=400,  
background_color='white').generate(sample_text)  
  
# Display the word cloud using matplotlib  
plt.figure(figsize=(10, 5))  
plt.imshow(wordcloud, interpolation='bilinear')  
plt.axis("off")  
plt.show()
```

Output:



Results and Discussions :

Text preprocessing plays a pivotal role in Natural Language Processing (NLP) by refining raw textual Results and Discussions: The results will display the generated word cloud, showcasing the words with varying font sizes and colors based on their frequency. The discussion will focus on the visual representation, the prominence of words, and how it aids in understanding the most significant terms in the given text.



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Conclusion:

Word clouds are a useful visualization tool in NLP for presenting the most frequent words in a visually appealing manner. They offer a quick understanding of the key terms in a text, aiding in analysis and interpretation. The frequency-based representation in a word cloud allows for a simplified yet effective visualization of textual data.
