

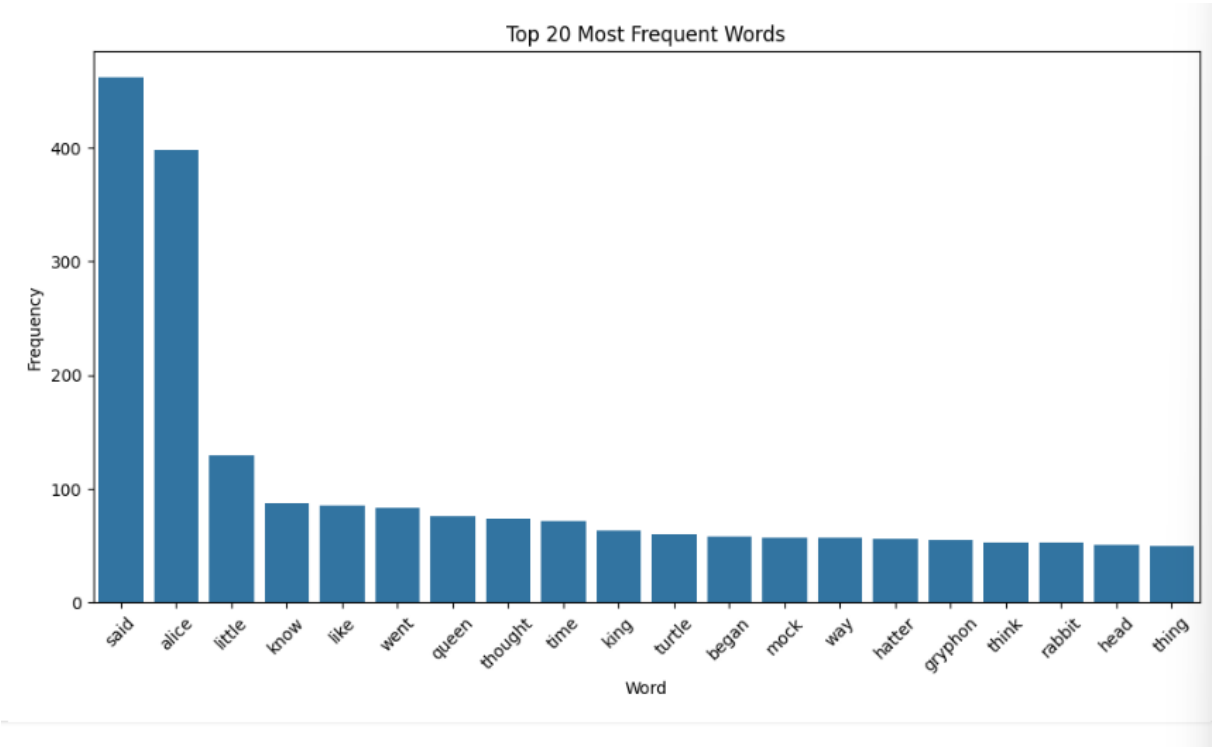
Alice in Wonderland NLP Analysis Report

1. Word Cloud



The word cloud visually displays the most frequent words in 'Alice in Wonderland'. Larger words appear more frequently. 'Alice', 'said', 'queen', and 'little' are highly dominant, indicating they are central to the narrative or characters.

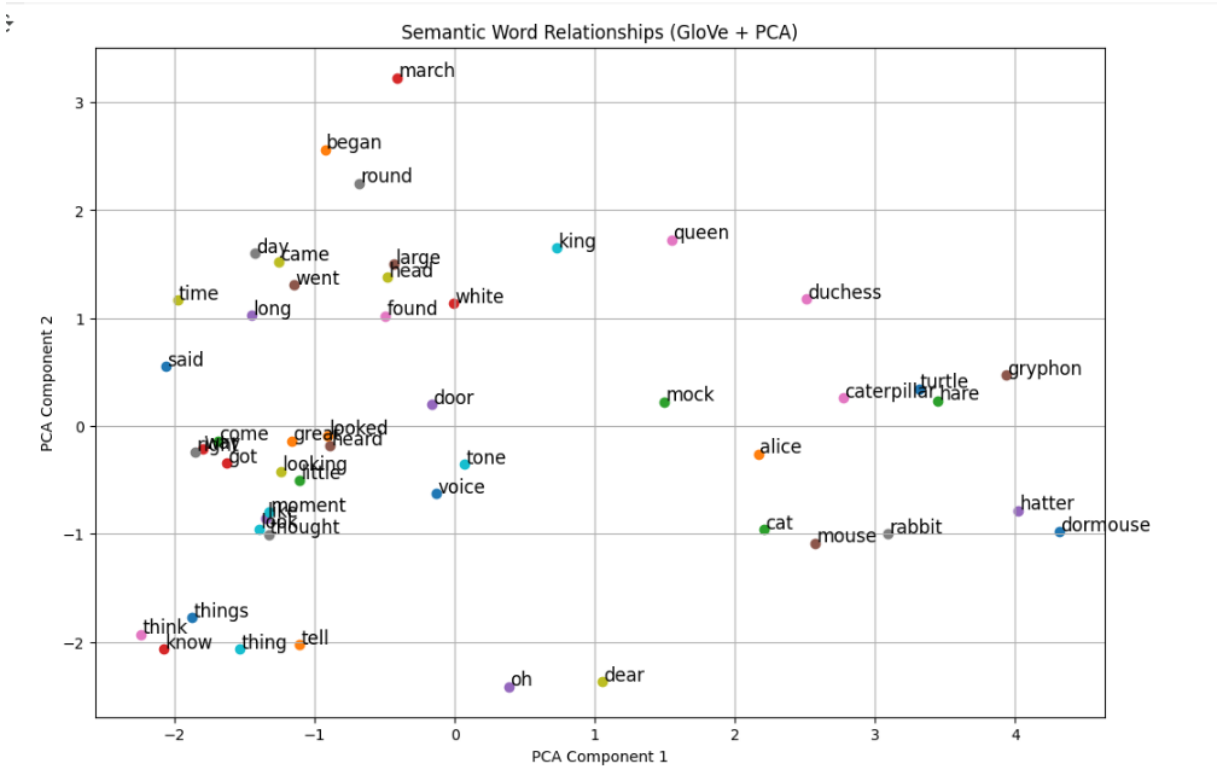
2. Word Frequency Bar Chart



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This chart ranks the 20 most frequent words. 'Said' and 'Alice' are by far the most frequent, reflecting dialogue-driven storytelling. Words like 'queen', 'rabbit', and 'king' highlight key characters.

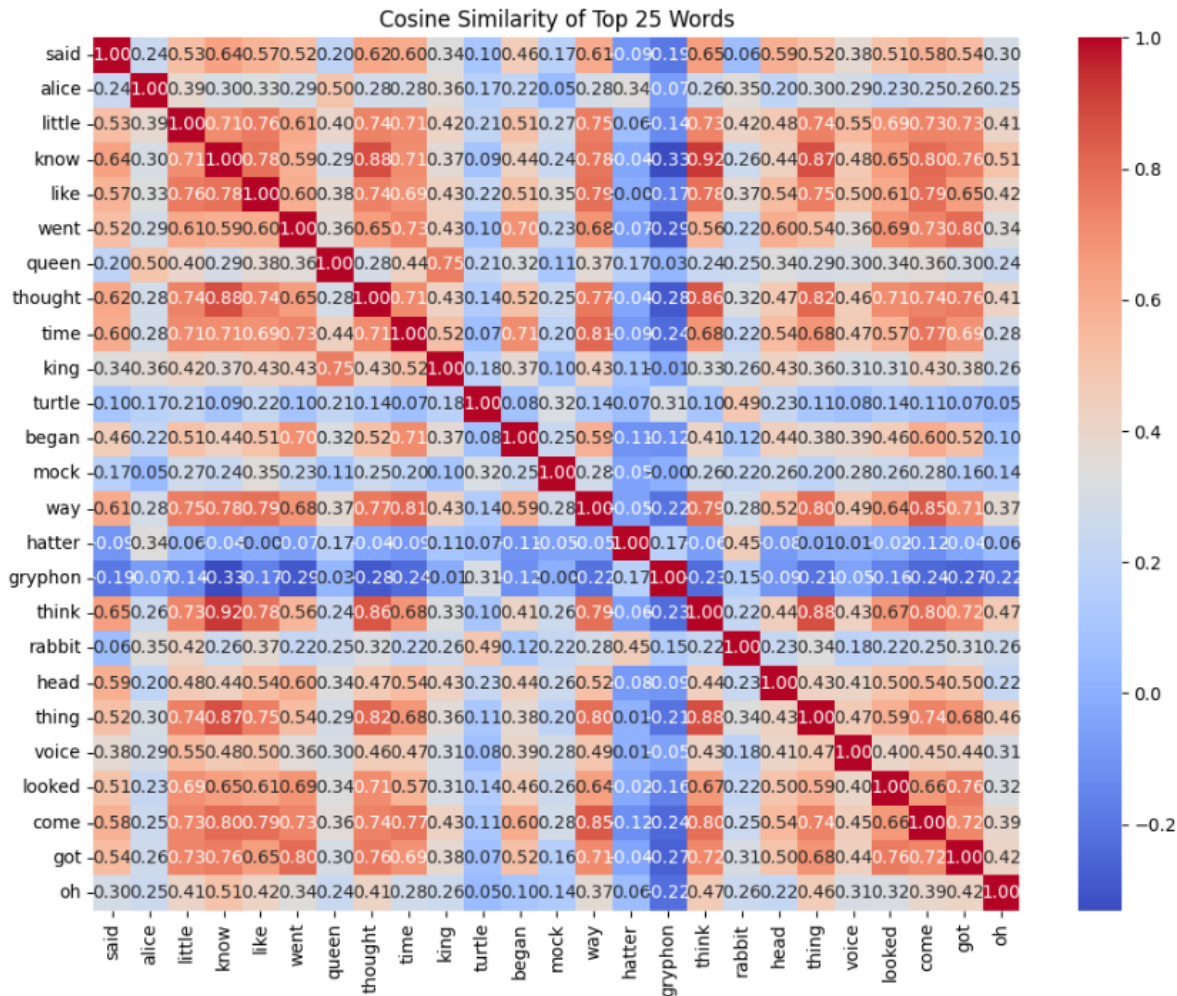
3. Semantic Word Relationships (PCA)



Using GloVe word embeddings reduced by PCA, this plot groups words by semantic similarity. We can see clusters: animals (e.g., rabbit, turtle, mouse), characters (e.g., queen, king, duchess), and actions (e.g., said, looked, began). It reflects how meanings cluster in vector space.

4. Cosine Similarity Heatmap

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This heatmap shows how semantically close the top 25 words are using cosine similarity. For example, 'queen' and 'king' have high similarity. The matrix helps us detect synonyms, thematic relations, or character roles based on usage context.

5. Discussion & Insights

From the word cloud and frequency analysis, it's evident that 'Alice' and conversations ('said') are at the heart of the book. Semantic PCA visualization reveals thematic groupings - supporting the idea that word vectors capture nuanced meaning. Cosine similarity further validates this by showing relationships like 'queen' ~ 'king' and 'rabbit' ~ 'mouse'.

Overall, these techniques demonstrate the power of NLP and word embeddings in uncovering structure and meaning from unstructured text.