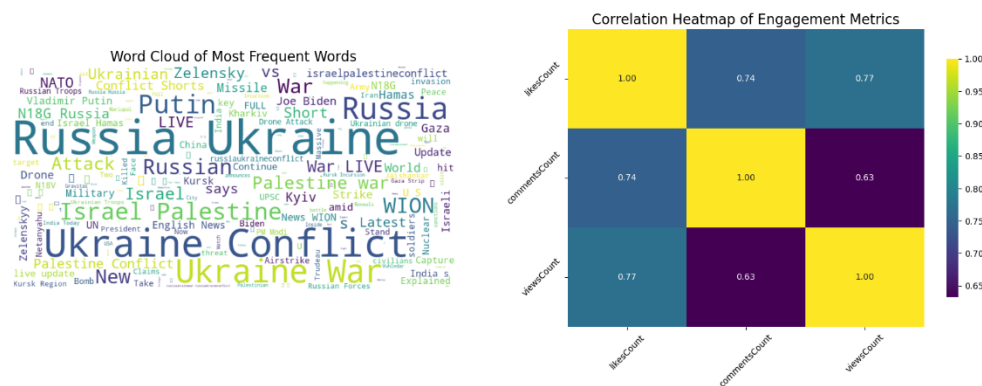
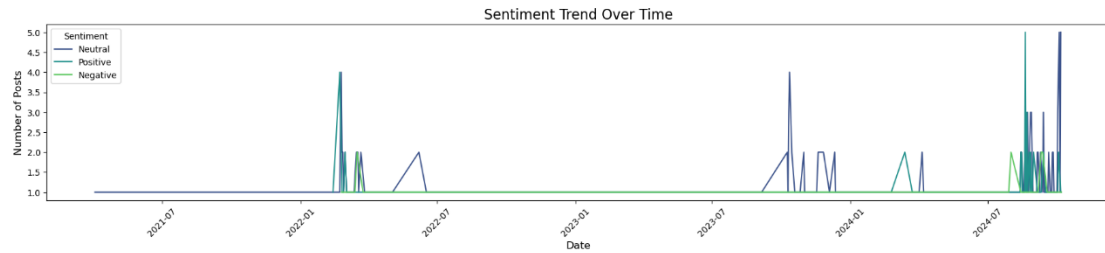
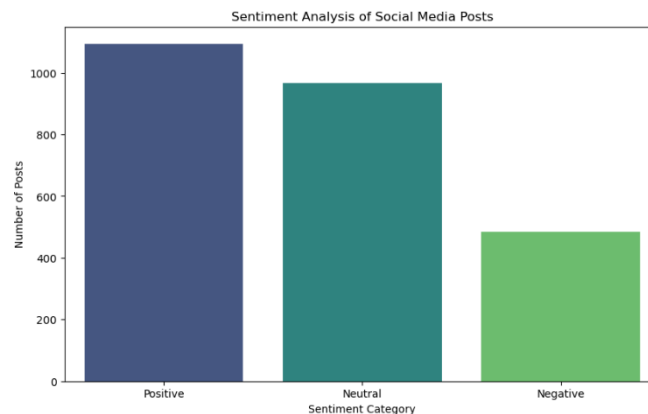


Dynamic Analysis of Social Media Emotion and User Interaction



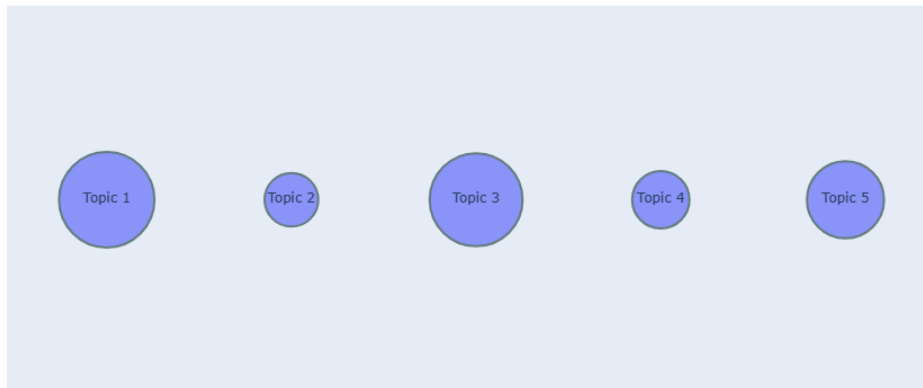
The comprehensive chart integrates three parts: the emotional trend map at the top, the word cloud map in the lower left corner and the correlation heat map in the lower right corner. The emotion trend chart shows the fluctuation of emotion with time. After mid-2024, positive emotion is dominant, but negative emotion rises at a specific time point, which may be related to controversial events. The word cloud map highlights the core topics such as "Ukraine", "Russia" and "War", and reflects users' discussion on geopolitical conflicts. Correlation heat map quantifies the relationship between interactive indicators, among which the number of views and the number of likes are the strongest. The overall chart reveals the relationship between emotional trends, discussion hotspots and user interaction behavior.



The chart, titled "Trend of Social Media Posts Over Time", displays the number of posts (Y-axis, 0 to 35) against time (X-axis, from July 2020 to July 2024). The data shows a period of low activity (mostly 0-2 posts) from July 2020 through early 2024. A significant spike occurs in early 2024, reaching a peak of approximately 34 posts in July 2024, followed by a sharp decline to around 10 posts by the end of the period shown.

The network diagram shows the relationship between social media users and the topic tags they use through nodes and edges. The central node like "russiaukraineconflict" in the figure shows that this topic is the core of the discussion. The links between other topic tags and users show the concerns of different users on common topics.

Topics Extracted from Social Media Posts



Using LDA topic model, five main topics are extracted from text data, and the importance of each topic, that is, the sum of word frequency weights, is demonstrated by bubble diagram. For example, the bubbles of Topic 1 and Topic 3 in the bubble chart are large, indicating that these topics are dominant in social media discussions. Through the analysis of key words, we can see that the discussion focuses on international conflicts, military affairs and geopolitics.

Importance: The comprehensive chart comprehensively presents the social media dynamics through three dimensions: emotional trend, keyword extraction and correlation of interactive indicators. The emotion trend chart reveals the fluctuation of public emotion with time, and can reflect the influence of specific events on users' emotions. The cloud image of words directly shows the hot topics of discussion and helps to quickly locate the core topics that users pay attention to; Correlation heat map quantifies the relationship between user interaction behaviors and provides data support for understanding user behavior patterns. These analyses are of great significance for understanding the evolution of public opinion and user behavior on social media, which can not only provide a basis for communication studies, but also provide practical reference for formulating data-driven strategies and policies.

Data and Method: The data comes from kaggle, which contains public data sets of social media texts, interactive indicators such as likes, comments, views and release time. The TextBlob library is used in sentiment analysis, and the polarity of each text is analyzed, and the sentiment is classified into positive, negative and neutral according to the polarity score. Keyword extraction generates a cloud image of words through WordCloud library, which intuitively shows the words with the highest frequency in the data and their relative weights. The correlation analysis of interactive indicators uses pandas and seaborn libraries to quantify the relationship between likes, comments and viewing, and visualize it through heat maps. The integrated visual chart is realized by matplotlib and seaborn, which comprehensively presents the characteristics of emotional trends, discussion hotspots and user interaction, and reveals the hidden patterns and relationships in the data.