**Social Media Sentiment Analysis** is a powerful tool used to understand public opinion towards specific topics, products, or events by analysing social media posts. Here's a step-by-step guide on how to perform sentiment analysis on social media data (e.g., Twitter), preprocess the text data, extract sentiment scores, and visualize sentiment trends over time using **Natural Language Processing (NLP)** techniques.

**Steps for Social Media Sentiment Analysis**

1. **Data Collection**:
   * You can use Twitter's **API** to collect tweets based on specific keywords, hashtags, or mentions. For this, you need to set up access with the [Twitter Developer API](https://developer.twitter.com/).
2. **Preprocessing the Data**:
   * Clean the data to remove irrelevant information (e.g., special characters, URLs, stop words).
   * Tokenize the text (split it into words or phrases).
   * Lemmatize or stem words to reduce them to their root form.
3. **Sentiment Analysis**:
   * Use sentiment analysis libraries such as Text Blob, VADER, or machine learning models (e.g., BERT, GPT) to classify the sentiment of each tweet as **positive**, **negative**, or **neutral**.
4. **Visualization**:
   * Plot sentiment scores over time to visualize trends, compare sentiment for specific topics, or see how sentiment evolves over time.