**Fr. Conceicao Rodrigues College of Engineering** Father Agnel Ashram, Bandstand, Bandra –west, Mumbai-50 

**Department of Computer Engineering**

**SOCIAL MEDIA ANALYTICS LAB**

**Experiment No: 5**

**Aim:** Develop Content (text, emoticons, image, audio, video) based social media analytics model for business. (e.g. Content Based Analysis: Topic, Issue, Trend, sentiment/opinion analysis, audio, video, image analytics)

**Objective:** The model will include text, emoticons, image, audio, and video analytics to analyze and extract valuable insights such as topics, issues, trends, sentiment/opinions, and multimedia content.

**Lab outcomes:**

*At the end of this lab session, students will be able to…*

1. Develop model of Comprehensive Content-Based Social Media Analytics Model for Business Insights

**Theory**

1. **Data Collection:**

○ Utilize social media platform APIs to gather diverse data (text, images, audio, video).

○ Collect data on specific topics or hashtags relevant to the business.

2. **Data Preprocessing:**

○ Clean and preprocess text data by removing stopwords, special characters, and performing tokenization.

○ Extract metadata from multimedia content (image, audio, video).

○ Normalize and standardize data formats for consistent analysis.

3. **Text Analytics:**

○ Conduct topic modeling using techniques such as Latent Dirichlet Allocation (LDA) or Non-Negative Matrix Factorization (NMF).

○ Perform sentiment analysis on text using NLP techniques to gauge the sentiment of posts.

4. **Image Analytics:**

○ Employ image processing techniques to analyze visual content.

○ Implement image recognition algorithms using pre-trained models or train custom models to identify relevant objects or themes.

5. **Audio Analytics:**

○ Extract relevant features from audio data using audio processing libraries. ○ Use machine learning models to identify patterns and sentiments in the spoken content.

6. **Video Analytics:**

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○ Implement video analysis techniques, such as frame extraction and object recognition.

○ Explore sentiment analysis on video content by analyzing visual and audio cues. 7. **Integration and Fusion:**

○ Integrate the insights obtained from text, image, audio, and video analyses. ○ Implement fusion techniques to combine results and provide a holistic view of social media content.

8. **Model Evaluation:**

○ Evaluate the performance of the integrated model using appropriate metrics for each type of analysis (text, image, audio, video).

9. **Visualization:**

○ Create visually appealing and informative dashboards to present the results. ○ Visualize trends, sentiments, and multimedia content analytics.

10. **Model Deployment:**

○ Develop a scalable and deployable model for continuous social media monitoring. ○ Consider cloud services or server deployment for real-time analysis.

11. **Business Insights and Recommendations:**

○ Derive actionable insights for the business based on the analytics results. ○ Provide recommendations for strategic decision-making and improving social media engagement.

**Student’s Task:**

1. Import necessary libraries

2. Set up Twitter API credentials

3. Authenticate with Twitter API

4. fetch tweets based on a given hashtag

5. perform sentiment analysis using NLTK

6. Topic modeling using Latent Dirichlet Allocation

7. perform audio processing using LibROSA

8. represent results in visualize format

**Article Discussion**

“The approach to building a graph knowledge base using social media data” Vadim Moshkin

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Answer the following questions based on above article.

1. What is the main aim of the work presented by Vadim Moshkin in the paper, and how does it contribute to improving information systems in the context of social media data?

2. Can you explain the ontological model proposed for the unification of data profiles from different social networks?

3. What are the key methods and approaches mentioned in the paper for obtaining representative sets of social network users? Discuss the "width traversal method," the "forest fire" method, and the "Metropolis Hastings method."

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