**YouTube Trending Video Analytics Project Report**

**Introduction**

The objective of this project is to uncover patterns in trending YouTube videos by analyzing datasets across regions, with a primary focus on the US dataset. By examining video metadata, viewership metrics, and sentiment of titles, the project provides insights into content popularity, audience engagement, and temporal trends.

**Abstract**

This analysis identifies the most popular video categories, public sentiment, and trends in video longevity. Using Python, SQL, and Tableau, we cleaned and standardized YouTube data, performed sentiment analysis on video titles, visualized trending durations, and created dashboards for actionable insights. The final outcome helps content creators, marketers, and analysts understand the factors contributing to trending videos.

**Tools Used** –

Python: Pandas, NumPy, Matplotlib, Seaborn, TextBlob – for data cleaning, analysis, and visualization. - SQL: Aggregation and ranking of categories, extracting key metrics. - Tableau: Dashboard creation and interactive visualizations. - Excel/XLSX: Raw data storage and preprocessing.

**Steps Involved in Building the Project**

1. Data Collection and Cleaning: - Loaded YouTube trending datasets and standardized columns across different regions. - Converted publish dates to datetime format and handled missing values.

1. Feature Extraction and Analysis:
   * Extracted publish hour and day for temporal analysis.
   * Calculated trending duration per video and other metrics like views, likes, and comments.
2. Sentiment Analysis:
   * Performed polarity-based sentiment analysis of video titles using TextBlob.
   * Categorized titles as Positive, Negative, or Neutral.
3. SQL Analysis:
   * Aggregated data to find top categories by average views.
   * Ranked videos and categories for deeper insights.
4. Visualization & Dashboard Creation:
   * Used Matplotlib and Seaborn for distribution plots and scatterplots.
   * Created a Tableau dashboard showing:
     + Top categories
     + Sentiment distribution
     + Trending duration
     + Day-of-week trends
   * Added interactive filters for category, sentiment, and publish date.

**Conclusion**

The project successfully revealed patterns in YouTube trending videos. Key insights include: - Certain categories consistently achieve higher average views. - Public sentiment of video titles can impact engagement. - Videos typically trend for a short duration, with few maintaining long-term visibility. - Temporal factors like day of publishing affect video performance.

The enhanced dataset and dashboards provide a reusable framework for further analysis and real-time monitoring of trends. This workflow can be applied to datasets from other regions for comparative analysis.