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Data Science

Youtube Sentiment Analyser

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Project Guide

Prof. Richa Singh

Outline

- Introduction
- Literature Survey of the existing systems
- Limitations of the existing systems
- Problem statement
- System Design
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- Implementation
- Conclusion
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Introduction

- The growing influence of digital content, YouTube has emerged as a dominant platform for creators and audiences alike.
- The YouTube Sentiment Analyser offers a solution by providing insights into channel performance, suggesting optimized video titles, and analyzing viewer sentiments through comments.
- In addition, it includes a video summarizer to help both creators and viewers quickly grasp the key points of lengthy videos.
- This comprehensive tool empowers content creators to enhance their strategies and connect more effectively with their audiences.

Introduction

1.1 MOTIVATION :

- The primary motivation behind this project stems from the need to simplify the feedback analysis process for YouTube creators.
- The difficulty for creators in analyzing large volumes of comments, leading to missed valuable feedback.
- The need for a reliable way to track channel performance trends over time.
- They struggle to create engaging titles that capture audience attention.

Introduction

1.2 Objectives :

- To analyze comments by classifying them as positive, negative, or neutral for better feedback understanding using Naïve Bayes algorithm.
- To track growth by analyzing and comparing channel performance over time.
- To recommend engaging video titles based on descriptions and categories using T5 Transformer.
- To summarize videos by providing brief summaries to save viewer’s time.

Literature Survey of the existing system

Sr No	Title	Author	Year	Outcomes	Methodology	Result
1	[1] Sentimet Analysis for YouTube Videos with User Comment	Rawan Fahad Alhujaili, Wael M.S. Yafooz	30 Nov 2021	Provides insights into user opinions by classifying comments into positive, negative, or neutral. Improves content strategy and engagement by understanding viewer sentiment.	Applies natural language processing (NLP) and machine learning techniques. Evaluates various sentiment classification models for accuracy.	Offers valuable insights for enhancing content strategy and audience interaction. Addresses challenges in sentiment analysis and recommends effective models.

Literature Survey of the existing system

Sr No.	Title	Author	Year	Outcomes	Methodology	Result
2	[2] A Classification Scheme for Content Analyses of YouTube Video Comment	Amy Madden, Ian Ruthven, David McMenemy	2 Sept 2013	Develops a classification scheme to categorize YouTube comments into ten broad categories and 58 subcategories. Helps understand various communicative purposes of comments.	Analyzes 66,637 comments to create a detailed classification schema.	Provides a structured approach for analyzing and mining user generated content. Useful for researchers in various disciplines studying YouTube comments.

Literature Survey of the existing system

Sr No.	Title	Author	Year	Outcomes	Methodology	Result
3	[3] Engagement and Populariy Dynamics of YouTube Videos and Sensitiviy to Meta Data	William Hoiles, Anup Aprem, Vikram Krishnn murthy	1 July 2017	Examines how meta-level features (title, tag, thumbnail, description) and social dynamics affect YouTube video popularity. Identifies key features influencing view counts and suggests optimization strategies.	Uses real-world data of 6 million videos and 25 thousand channels. Analyzes the impact of meta level features and social dynamics	Provides insights into optimizing video meta data for increased popularity. Highlights the relationship between views and subscribers, and the effects of scheduling and playthrough.

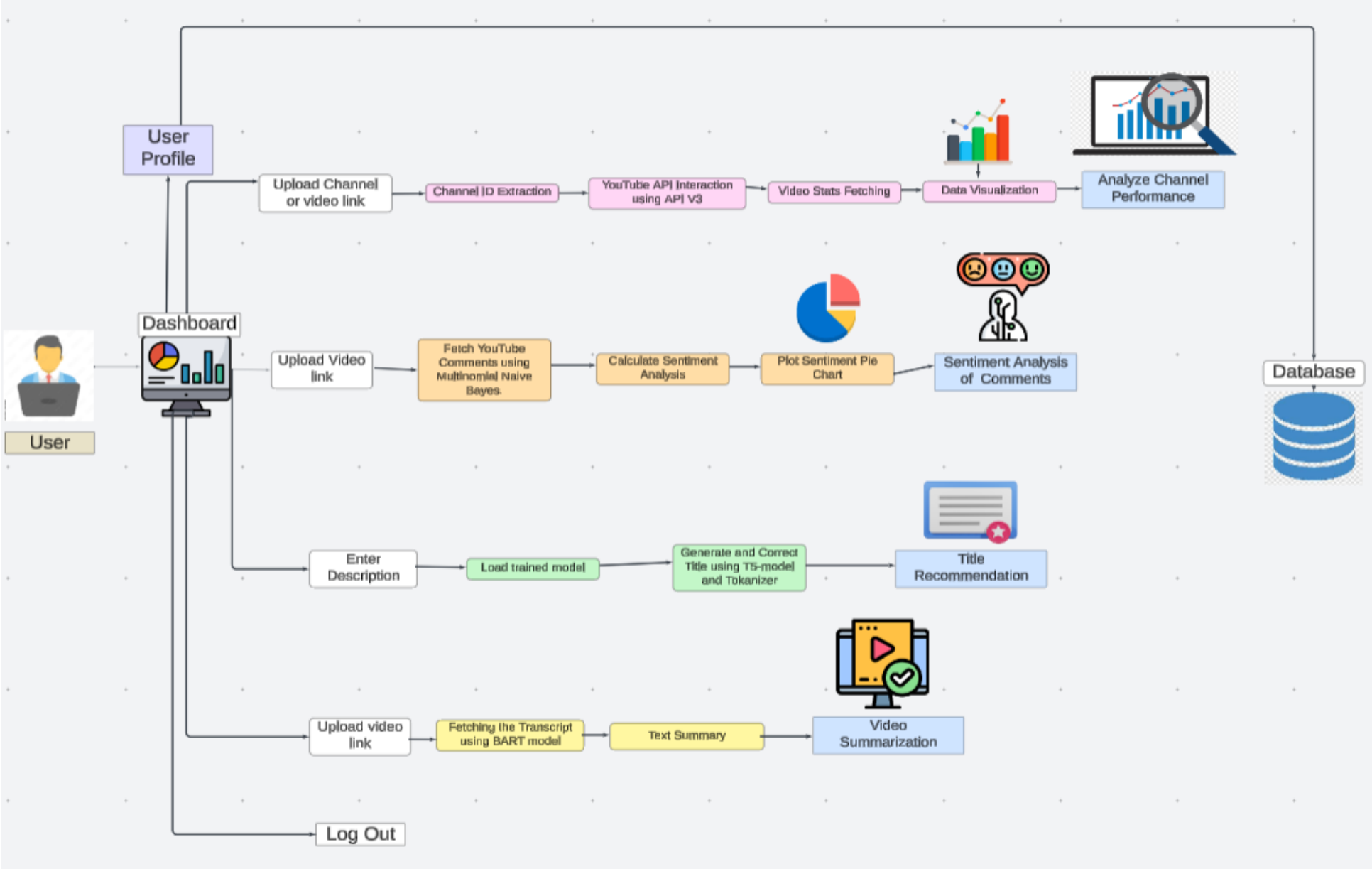
Limitations of existing systems

- In sentiment Analysis, Naive Bayes assumes independence among features, which can limit accuracy in complex sentiment tasks.
- External factors like trending topics or algorithm changes can cause fluctuations in growth tracking, making consistent tracking difficult.
- The T5 transformer might struggle to generate engaging and context-appropriate titles, especially for niche or complex topics.

Problem statement

- Creators struggle to quickly gauge audience reactions due to the large volume of comments, leading to difficulty in analyzing user’s sentiment.
- Creators lack tools to consistently track and analyze channel performance, making informed decisions harder.
- Generating engaging video titles and summaries is tedious, leading to missed opportunities for content optimization.
- Viewers and creators need a way to provide and access concise video summaries, making content more accessible and to get the overview of the content before watching.

System Design



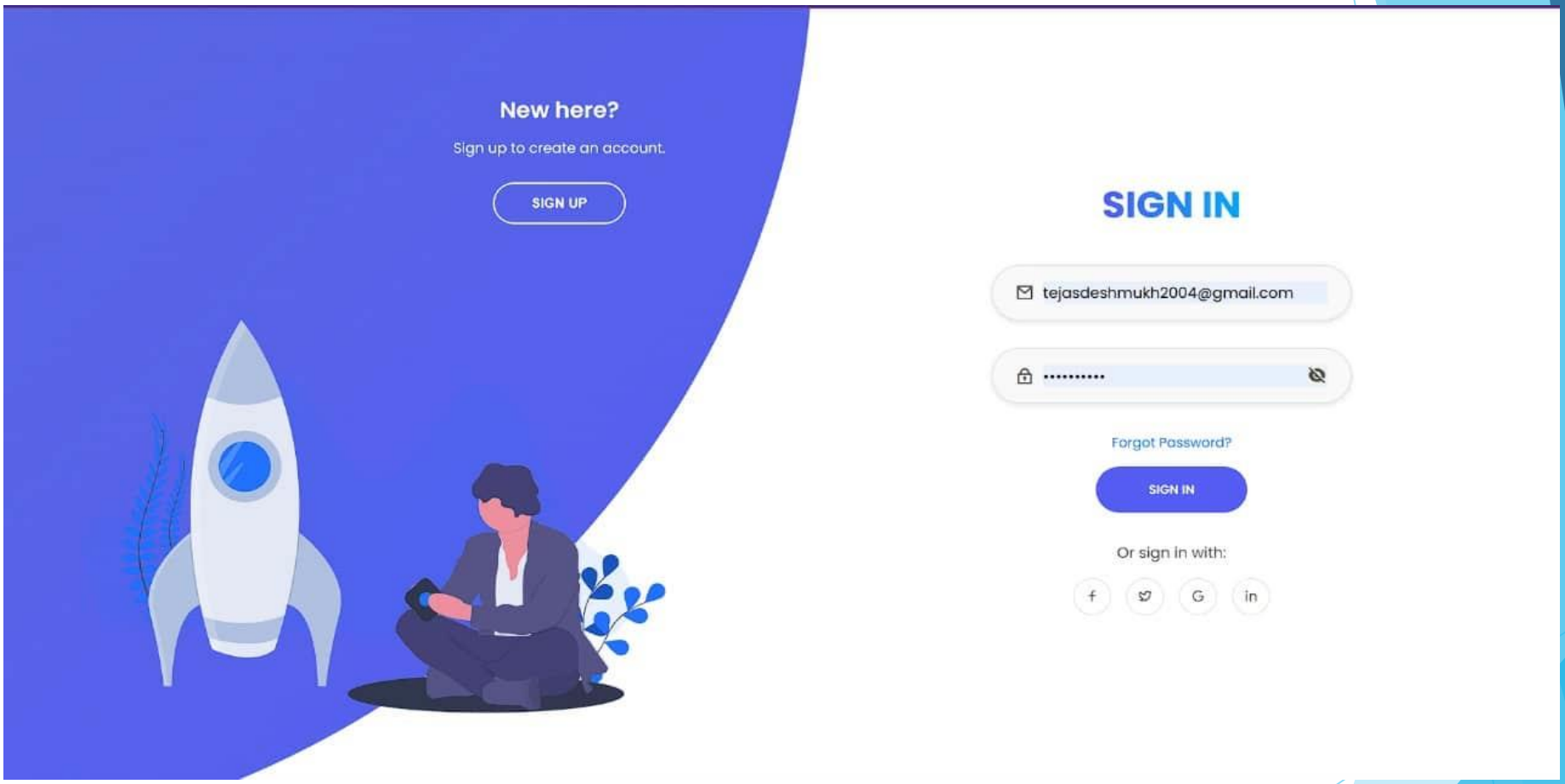
Technologies and methodologies

- **Front-End :**
  1. HTML
  2. CSS
  3. JS (Javascript)

- **Back-End** :
  1. MySQL
  2. Flask

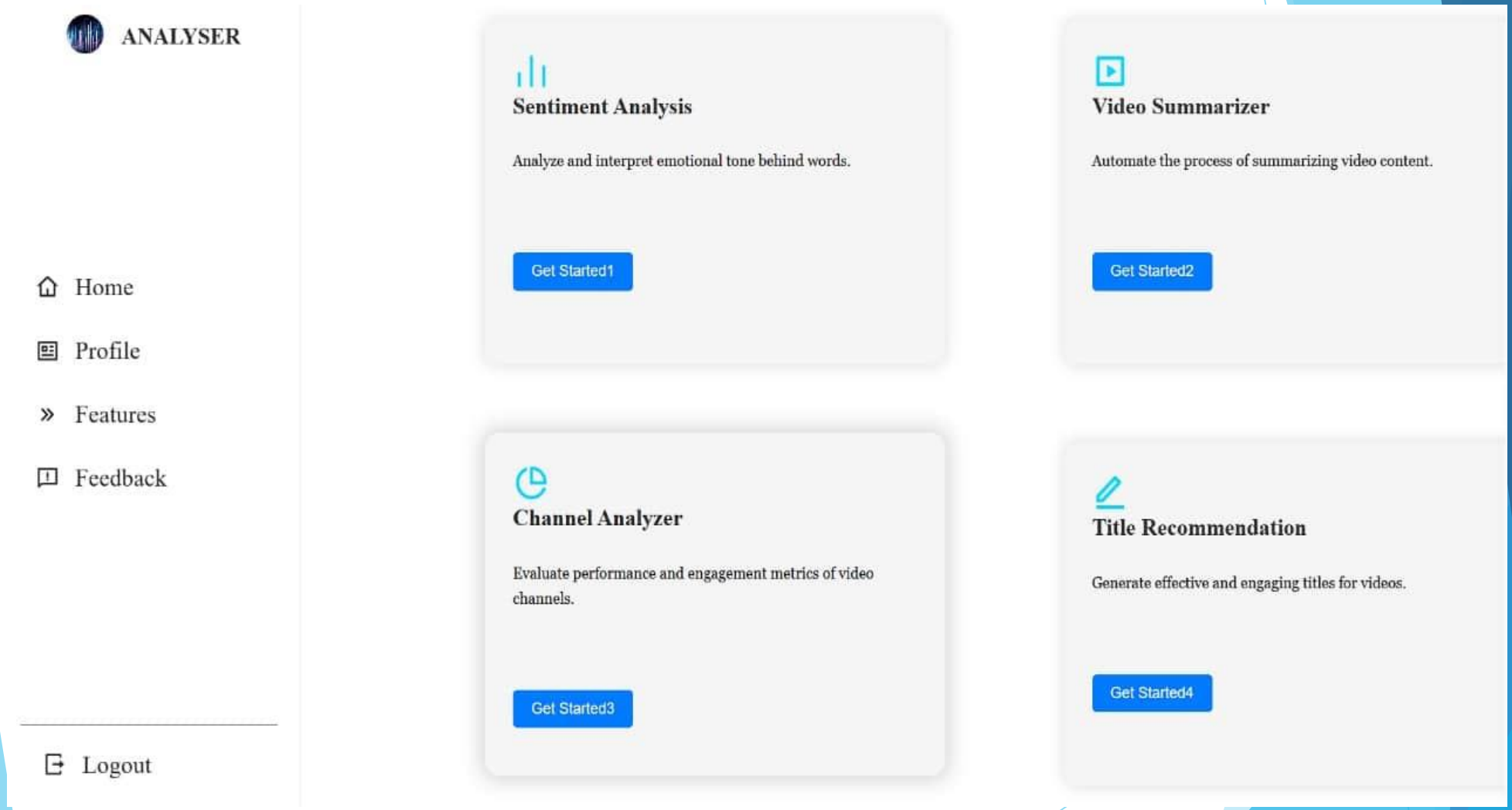
- **Algorithms & Models :**
  1. Multinomial Naive Bayes (MultinomialNB) Algorithm
  2. YouTube Data API v3 Model
  3. T5 -(Text-To-Text Transfer Transformer) model
  4. BART (Bidirectional and Auto-Regressive Transformers) model

Implementation



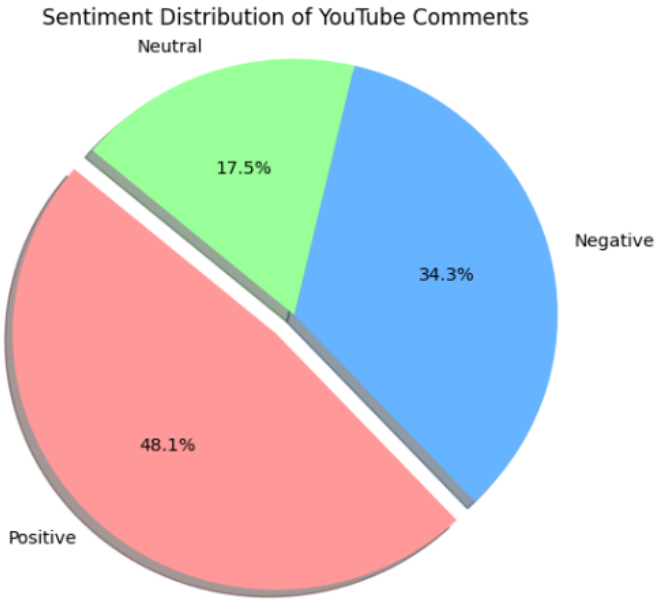
Implementation

Implementation



Implementation

Sentiment Analysis Results for Video ID: hlGoQC332VM



Positive: 48.12903225806451%

Negative: 34.32258064516129%

Neutral: 17.548387096774192%

Implementation

YouTube Channel Statistics

Apna College

Subscribers Count	Views Count	Total Videos	Created Date
5960000	939770592	860	2020-08-05

Recent Videos

Pointers in C++ | In Detail | DSA Series by Shradha Ma'am

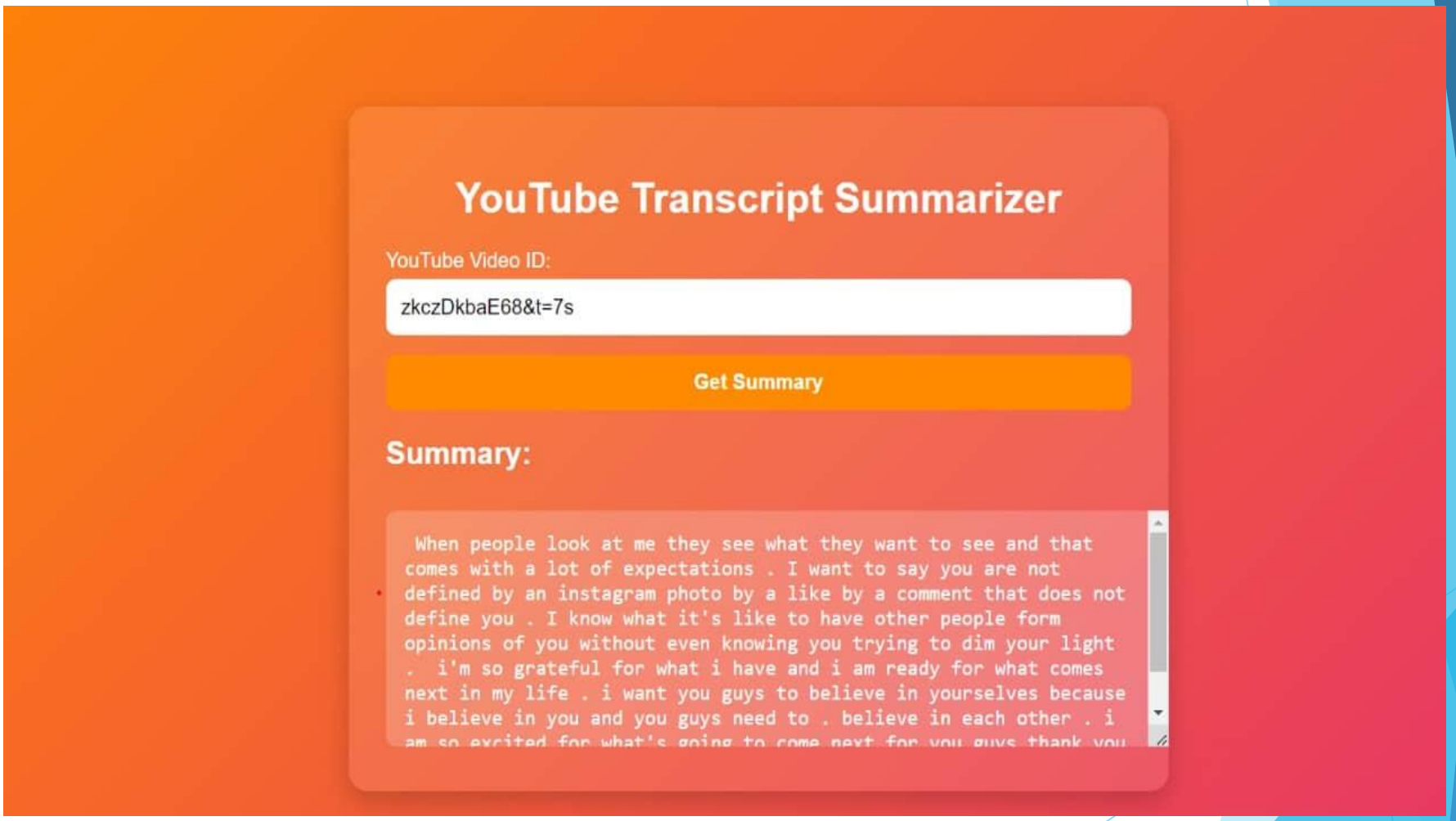
Product of Array Except Self | Brute to Optimal Solution | Leetcode 238

Container with Most Water Problem | Brute & Optimal Solution | Two Pointer Approach - Leetcode 11

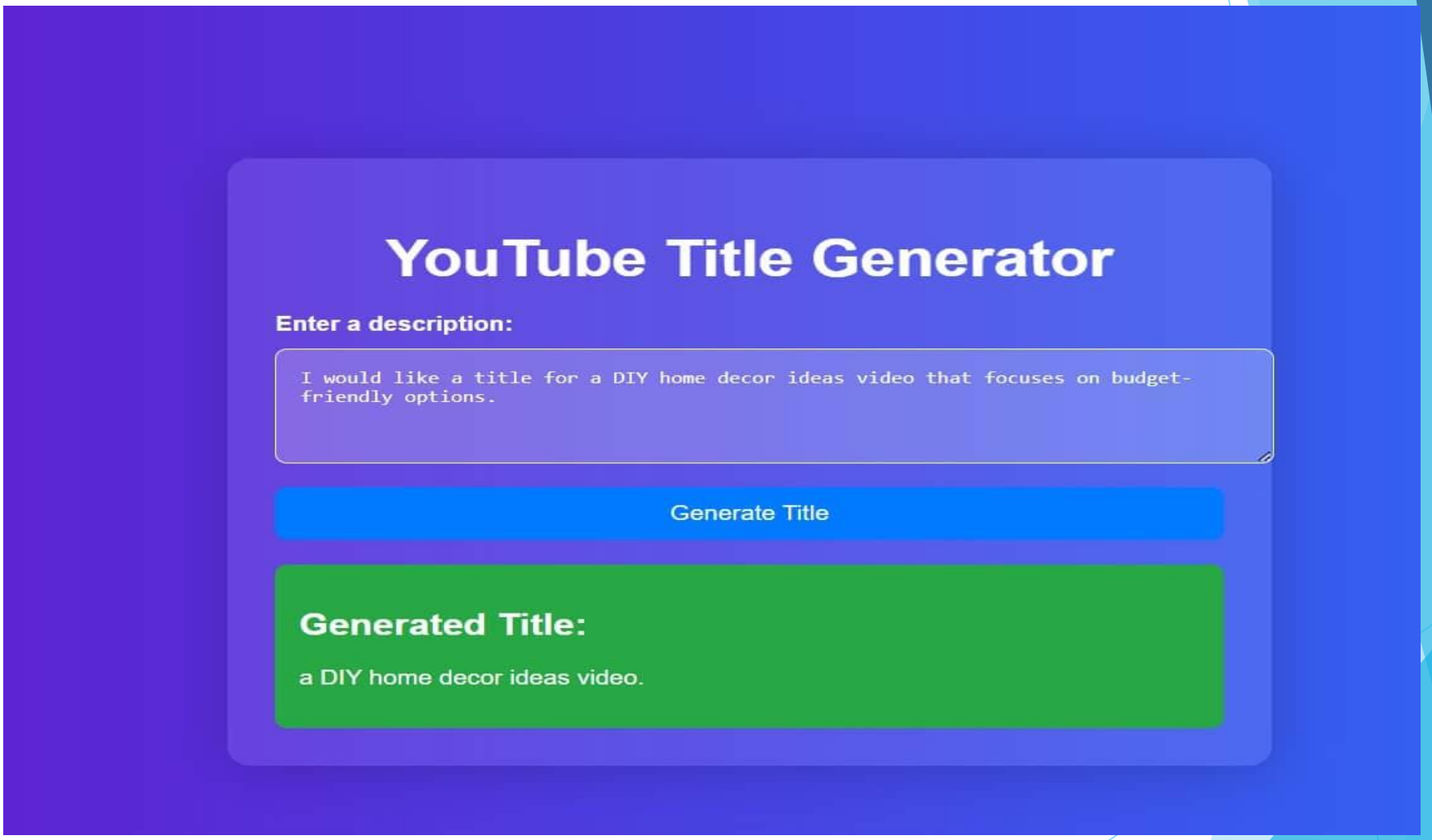
Buy and Sell Stock Problem and Pow(X,N) Power exponential Problem - Leetcode | DSA Series

Time & Space Complexity - DSA Series by Shradha Ma'am

Implementation



Implementation



Conclusion

The YouTube Sentiment Analyzer is a crucial tool for content creators, providing valuable insights into viewer sentiments and enhancing their understanding of audience feedback. By offering features like title optimization and video transcript summarization, the Analyzer helps creators refine their content strategies for better engagement.

References

[1] Rawan Fahad Alhujaili, Wael M.S. Yafooz, "Sentiment Analysis for YouTube Videos with User Comments: Review," IEEE Xplore, 2021. DOI: 10.1109/ICAIS50930.2021.9396049.

[2] Madden, A., Ruthven, I., & McMenemy, D. (2013). A classification scheme for content analyses of YouTube video comments. *Journal of Documentation*, 69(5), 693-714.

[3] G. Gürsun, M. Crovella, and I. Matta, “Describing and forecasting video access patterns,” in *Proc. IEEE INFOCOM* , 2011, pp. 16–20.

Thank You...!!