

VOICE-OVER SENTIMENTAL ANALYSIS FOR MOVIE REVIEW SYSTEM

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ABSTRACT

To comprehend the sentiments portrayed in text data, sentiment analysis is essential. Because Tamil is a colloquial language and contains many idiomatic terms, proper sentiment analysis of Tamil movie reviews is difficult. This study suggests a Python-based voice-over sentiment analysis system for Tamil movie reviews. The technology uses cutting-edge natural language processing (NLP) and machine learning techniques to assess the voice-over's text and audio components. The goal is to offer a thorough sentiment analysis of informal Tamil movie reviews that takes into account both language and emotional cues. The practice of identifying the sentiment or emotion expressed in a text is known as sentiment analysis. Sentiment analysis has grown in importance as a tool for analyzing the reactions of audiences to films as moviegoing has gotten more and more popular and user-generated material has increased on social media platforms. This abstract outlines a thorough method for utilizing Python to conduct sentiment analysis on informal Tamil movie reviews. The purpose of this project is to create a system for categorizing Tamil movie reviews as favorable, bad, or neutral. The system will use natural language processing (NLP) and machine learning methods to analyze the sentiment included in the text. Domain-specific lexicons and sentiment dictionaries will be developed and used to increase the precision of the sentiment analysis. Specific terms and idioms connected to Tamil movies will be captured by these lexicons. The proposed Tamil movie review system will offer insightful information on how the audience feels about movies. Filmmakers, distributors, and marketers can use it to evaluate the performance and reception of their films. It can also assist movie lovers in making intelligent choices regarding the films they will view. Tamil movie reviews will make up a sizable portion of the dataset utilized for training and evaluation, ensuring the system's accuracy. The advantages and uses of the suggested system are also highlighted, including its ability to help viewers make educated selections, offer insightful information to distributors and makers of motion pictures, and improve tailored movie suggestions. The report also highlights future work on adding idiomatic terms to the sentiment lexicon and using appropriate datasets for analysis. Overall, this paper gives a thorough framework for voice-over sentiment analysis in Tamil movie reviews, demonstrating the power of Python and NLP tools for studying spoken languages. The technology intends to expand sentiment analysis methodologies and improve comprehension of audience attitudes toward Tamil movies.

Keyword: - Sentimental analysis, colloquial language, python, etc.

1. INTRODUCTION

As the number of Internet papers grows quickly and the Internet has developed into a space full of significant information, perspectives, and relevant dialogues, most of the current research is now concentrating on the area of sentiment analysis and opinion mining. These factors make statistical analyses necessary and influential when evaluating products, well-known figures, and significant issues. Sentiment analysis is the process of identifying and extracting subjective information from the source materials using computational linguistics, text analysis, and natural language processing. It seeks to ascertain a speaker's or writer's attitude (judgment, evaluation, or opinion) toward a particular subject or the general contextual polarity (positive, negative, or neutral) of a document. Opinion mining can also examine opinions. Gather additional sophisticated and relevant information, such as the degree of opinion polarity, the opinion goal, and the opinion holder. In the field of Natural Language Processing (NLP), sentiment analysis has recently attracted a lot of

interest and has grown to be an essential part of many applications, including social media monitoring, customer feedback analysis, and recommendation systems. Sentiment analysis for movie reviews is one area in particular that has witnessed a rise in attention. With Tamil movies becoming more and more well-known, there is an increasing demand for a powerful sentiment analysis system that can correctly interpret reviews written in informal Tamil. This article will examine the idea of voice-over sentiment analysis and how it might be used to create a sophisticated Tamil movie review system. There are mainly package libraries to be installed like google trans, Vader sentiment analyzer, speech recognition, gtts, OS, and pyttsx3. The module of work is, user input, which means as our project is regarding the movie review system in Tamil, we collect the user reviews through the microphone access and it is to be stored in the file format and then the stored info is to be accessed and converted into the list and then mapped with the demo dictionary and the words will be rephrased then google translate, finally the review is analyzed for the sentiment analysis like positive, negative and neutral. Sentiment analysis, commonly referred to as opinion mining, is the technique of identifying the sentiment contained in a text. To determine whether the sentiment is favorable, negative, or neutral, one must analyze the language. Traditional sentiment analysis methods frequently classify the sentiment of a given text using lexical resources and machine learning algorithms. However, these methods frequently have trouble deciphering informal language, such as that seen in movie reviews. Voice-Over Sentiment Analysis: Voice-over sentiment analysis is a new method that seeks to get over the drawbacks of conventional sentiment analysis methods while working with informal language. In this method, the auditory and acoustic qualities of the voice-over in movie reviews are examined in addition to the text.

1.1 Background of the work

Background: Sentiment analysis has received a lot of attention in the field of NLP, and several methods and strategies have been developed to do it across numerous languages. However, most contemporary sentiment analysis tools struggle to handle the colloquial nature of languages like Tamil and instead concentrate on evaluating formal, standard language. The informal, conversational nature of colloquial English, which frequently consists of slang, idiomatic idioms, and regional variations, defines it. Understanding the sentiment conveyed in a text accurately presents a challenge when evaluating colloquial language because the meaning might change depending on the situation and cultural differences. Furthermore, idiomatic idioms, which are frequently used in informal speech, might be difficult to understand and evaluate using conventional sentiment analysis methods. Consequently, specialist methods for colloquial languages in Tamil.
System Architecture: The voice-over sentiment analysis technique is included in a thorough framework in the proposed Tamil movie review system. The system is made up of several parts, each of which is in charge of a distinct step in the sentiment analysis pipeline.
Benefits and Applications: There are several possible advantages and uses for the suggested voice-over sentiment analysis system for Tamil movie reviews.
Moviegoer Decision Making: By accurately analyzing the emotion of Tamil movie reviews, the technology may help moviegoers make knowledgeable decisions. Users can rely on the system to determine how people feel about it generally.
Sentiment analysis using voice-overs: We suggest a voice-over sentiment analysis system to solve the difficulties caused by colloquial language in sentiment analysis. To give a thorough sentiment analysis of Tamil movie reviews, this method integrates the study of text and audio elements. To improve the precision and contextuality of sentiment analysis, voice-over sentiment analysis makes use of the linguistic and emotional clues included in the audio data. To evaluate and extract sentiment from both text and audio data, the voice-over sentiment analysis system makes use of a variety of NLP and machine-learning approaches. We can more accurately capture the emotions indicated in colloquial English by taking into account not only the textual content but also the tone, pitch, and emotional cues expressed in the audio data. With this strategy, we can handle the particular linguistic traits of Tamil movie reviews and deliver more precise sentiment analysis.

1.2 Scope of the work

The scope of work is that we can produce a more accurate sentiment analysis for colloquial language by taking into account both the linguistic and emotional clues contained in the voice-over. **Sentiment Analysis:** Tamil cinema has a distinctive linguistic style and a rich cultural history. Colloquial Tamil, a language that is frequently used in movie reviews, contains slang, regional dialects, and expressive vocabulary that can be difficult to decipher using conventional sentiment analysis methods. Tamil movie also features a variety of genres, each has linguistic quirks and emotional undertones unique to it. These elements make Tamil movie review sentiment analysis a challenging and exciting undertaking. Voice-over sentiment analysis is incorporated into the proposed Tamil Movie Review System to overcome the difficulties in sentiment analysis for reviews of Tamil films. To accurately analyze the sentiment of informal Tamil movie reviews, the system will make use of cutting-edge NLP techniques, machine learning algorithms, and sound analysis. The technology will produce more accurate sentiment analysis results by taking into account both the text's content and the emotional cues that are present in the voice-overs. **Applications and Benefits:** The proposed Tamil Movie Review System offers several applications and advantages. First off, giving moviegoers trustworthy sentiment analysis of Tamil movie reviews would help them make informed judgments. Additionally, it will help movie distributors and creators by offering insightful information on audience perceptions and preferences. To improve personalized movie recommendations, the technique can potentially be included in recommendation

systems. Additionally, the study and creation of this system will advance methodologies for sentiment analysis in informal languages. The difficulties encountered in sentiment analysis for Tamil movie reviews can be greatly reduced by using voice-over sentiment analysis. We can get more accurate results by combining acoustic analysis with text-based sentiment analysis. A greater knowledge of audience feelings toward Tamil cinema would be possible thanks to the proposed Tamil Movie Review System, which will also contribute to the expanding field of sentiment analysis. Advanced sentiment analysis methods are becoming more and more essential as Tamil cinema's popularity rises.

2. LITERATURE REVIEW: TECHNIQUES USED.

In the realm of sentiment analysis, various techniques, often implemented using Python and its associated libraries and packages, have been instrumental in extracting meaningful insights from textual data. Python, with its simplicity, versatility, and robust ecosystem, has emerged as a dominant language for sentiment analysis tasks.

The code provided employs a diverse range of programming languages and libraries to accomplish its tasks. Here's an explanation of their uses:

1. Python: Python is the primary programming language used in this code. It provides a versatile and powerful platform for various tasks, including data manipulation, string handling, and integration with external libraries. Its simplicity and extensive ecosystem make it a popular choice for tasks like sentiment analysis, translation, and speech processing.
2. Pyaudio: This library facilitates audio input and output operations. In this code, it's used for accessing the microphone to record the user's spoken input. This is crucial for the system to understand and process spoken reviews.
3. Googletrans: This library enables language translation using Google Translate. It's utilized to convert the user's spoken Tamil input into English. This step is pivotal for further processing, including sentiment analysis.
4. vaderSentiment: The vaderSentiment package is employed for sentiment analysis. Specifically, it employs the VADER (valence-aware dictionary and sentiment Reasoner) algorithm, which is designed for analyzing sentiments in text. It assesses the polarity of the text, determining whether it conveys positive, negative, or neutral sentiment.
5. Speech_recognition: This library provides the tools for recognizing and transcribing speech. It's used here to convert the user's spoken input into text, making it accessible for further processing. This is a fundamental component for building a spoken review system.
6. gets (Google Text-to-Speech): This package allows for text-to-speech conversion. It's used in the code to generate spoken responses from the system. This feature is crucial for providing feedback to the user in an audible format.
7. os: The 'os' library provides a way to interact with the operating system. In this code, it's used to play the generated audio file, providing the user with the system's response.

These libraries and packages collectively contribute to the code's ability to process spoken Tamil movie reviews.

2.1 Importance of colloquial sentiment analysis in movie review system:

Colloquial sentiment analysis holds immense significance in a movie review system for several compelling reasons. Firstly, it enables the system to tap into the pulse of the audience by deciphering opinions expressed in everyday, conversational language. This is crucial because colloquial expressions often carry nuances and contextual meanings that may not be evident in more formal or structured language. By comprehending the subtleties of colloquial speech, the system can provide a more accurate and nuanced analysis of audience sentiment. Secondly, colloquial sentiment analysis allows the movie review system to cater to a broader demographic. It accommodates individuals who might not be proficient in formal or written language but are well-versed in everyday conversation. This inclusivity ensures that the system captures a more comprehensive spectrum of opinions, enhancing its overall effectiveness. Moreover, colloquial sentiment analysis can capture the essence of cultural references and idiomatic expressions that are specific to a particular region or community. This is particularly important in a diverse linguistic landscape like Tamil, where different regions may have distinct colloquialisms. Understanding these cultural nuances is essential for accurately interpreting sentiment in movie reviews. Additionally, the insights derived from colloquial sentiment analysis can be invaluable for filmmakers and producers. It provides them with a direct line to the audience's emotional response, allowing them to gauge the impact of their work and make informed decisions for future projects. This feedback loop is essential for the continuous improvement and success of the film industry. The importance of colloquial sentiment analysis in a movie review system cannot be overstated. It empowers the system to connect on a deeper level with the audience, ensuring a more accurate portrayal of their sentiments. This, in turn, leads to a more inclusive and insightful platform for both movie enthusiasts and creators alike.

2.2 Methodologies proposed

- Converts the user's spoken words to text.
- Maps colloquial Tamil words to their English equivalents.
- Translates the preprocessed text to English.
- Analyzes the sentiment of the translated text.
- Provide a spoken response indicating whether the movie review is positive, neutral, or negative.

This methodology combines audio input processing, speech recognition, translation, sentiment analysis, and text-to-speech synthesis to create a user-friendly voice-based sentiment analysis system for colloquial Tamil movie reviews. Users can simply speak their review into the microphone, and the system provides a spoken response indicating the sentiment of the review. This approach facilitates a natural and accessible way for users to interact with the sentiment analysis system.

1. **SpeechRecognition library for speech recognition.** The key steps include initializing the microphone, reducing ambient noise for clear audio, and transcribing the spoken words into text using Google's speech recognition service. This module serves as the entry point for user interactions.
2. **Text Preprocessing and Mapping Module:** Colloquial language often contains slang and colloquialisms that need to be standardized for analysis. This module processes the transcribed text, lowers it to lowercase, and maps colloquial Tamil words to their English equivalents using a predefined dictionary ("sample_data"). This ensures that the text is in a consistent and analyzable format.
3. **Translation Module:** To enable sentiment analysis and provide English-language output, It employs the Google Translate API, accessible through the "google trans" library. This module translates the standardized Tamil text into English. This translation step is crucial for subsequent sentiment analysis.
4. **Sentiment Analysis Module:** Sentiment analysis is performed using the VADER Sentiment Intensity Analyzer. This module calculates sentiment polarity scores, including positive, neutral, and negative scores, based on the translated English text. The compound score provides an overall sentiment assessment.
5. **Response Generation Module:** Based on the compound sentiment score obtained from the sentiment analysis, this module generates a response message. If the sentiment is positive, it generates a positive message; if neutral, a neutral message; and if negative, a reassuring message to the user is created. This module ensures that the user receives an understandable and contextually relevant response.
6. **Text-to-Speech Synthesis and Output Module:** The final module converts the generated response message into speech using gTTS (Google Text-to-Speech). It saves the synthesized speech as an "output.mp3" file and plays it using the system's default media player. This step offers an immediate audio response to the user, providing a seamless and engaging user experience.

These work methods collectively form a comprehensive system for voice-based sentiment analysis of colloquial Tamil movie reviews. Each module contributes to a specific aspect of the user interaction process, from audio input and speech recognition to sentiment analysis and response generation, resulting in a user-friendly and accessible sentiment analysis system.

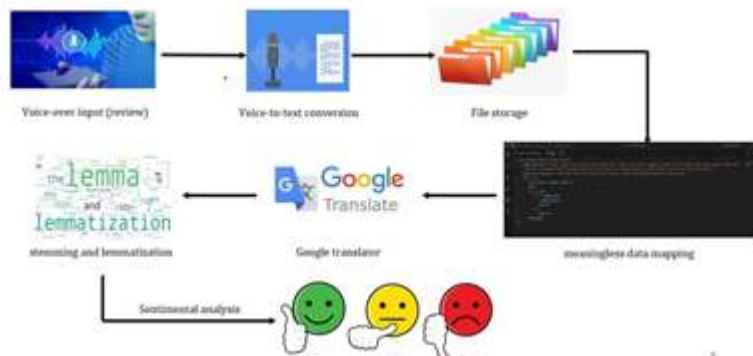


Fig 1. Process flow

3. PROPOSED WORK

Audio Input and Speech Recognition Module: This module is responsible for capturing audio input from the user's microphone. It employs the PyAudio library for audio access and the SpeechRecognition library for speech recognition. The key steps include initializing the microphone, reducing ambient noise for clear audio, and transcribing the spoken words into text using Google's speech recognition service. This module serves as the entry point for user interactions.

Text Preprocessing and Mapping Module: Colloquial language often contains slang and colloquialisms that need to be standardized for analysis. This module processes the transcribed text, lowers it to lowercase, and maps colloquial Tamil words to their English equivalents using a predefined dictionary ("sample_data"). This ensures that the text is in a consistent and analyzable format.

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Text-to-Speech Synthesis and Output Module: The final module converts the generated response message into speech using gTTS (Google Text-to-Speech). It saves the synthesized speech as an "output.mp3" file and plays it using the system's default media player. This step offers an immediate audio response to the user, providing a seamless and engaging user experience.

3.1 Work modules

Python script designed for sentiment analysis and voice output based on user input through a microphone. It starts by importing essential libraries, such as PyAudio for audio input, Google Translate for language translation, VADER Sentiment Analysis for sentiment analysis, and text-to-speech libraries for generating voice responses. The script initializes and configures a text-to-speech engine and sets up microphone access. It defines an "intro" function to convert text to speech using the chosen voice. Then, it captures audio from the user's microphone, reduces background noise, and listens for the user's message, which is recorded. Upon recognizing the user's speech using Google's speech recognition service, the script converts the text to lowercase and preprocesses it. Colloquial Tamil words are mapped to their English equivalents using a predefined dictionary. The preprocessed text is translated into English using the Google Translate API. Sentiment analysis is performed on the translated text using the VADER Sentiment Intensity Analyzer, which calculates sentiment polarity scores (positive, neutral, negative). Based on the compound sentiment score, the script determines whether the user's message is positive, neutral, or negative. It generates a response message accordingly and converts it to speech using text-to-speech synthesis with TTS. The synthesized speech is saved as "output.mp3" and played using the system's default media player.

3.1.1 packages

1. pyaudio: Used for audio input and microphone access.
2. google trans: Used for text translation via the Google Translate API.
3. Vader Sentiment: Used for sentiment analysis using the VADER lexicon.
4. Speech recognition: Used for recognizing speech from the microphone.
5. gtts (gTTS Google Text to Speech): Used for text-to-speech synthesis.
6. os: Used for system-level operations, including playing the generated audio.
7. pyttsx3: A text-to-speech library used to configure and generate speech output.

These packages and terms are crucial components of the It, enabling it to capture user input through a microphone, analyze sentiment, perform translations, and generate voice responses based on the sentiment analysis results.

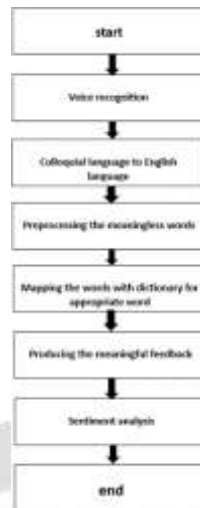


Fig 2. Proposed work plan

3.1.2 Terms:

8. Sentiment Analysis: The process of determining the sentiment or emotional tone of the text. This is used to analyze whether a movie review is positive, negative, or neutral.
9. Microphone Access: The ability to capture audio input from a microphone.
10. Text-to-speech (TTS): The conversion of text into spoken words.
11. Speech Recognition: The process of converting spoken language into written text.
12. Sentiment Polarity Scores: Numeric values representing the sentiment of text, typically including positive, neutral, and negative scores.
13. Compound Sentiment Score: A single sentiment score that combines positive, neutral, and negative sentiment scores to provide an overall sentiment assessment.
14. Preprocessing: The cleaning and transformation of text data to make it suitable for analysis.
15. Translation: The process of converting text from one language to another.
16. Colloquial Words: Informal and conversational words and phrases used in everyday language.
17. Text Recognition: The process of converting spoken words into machine-readable text.
18. User Interaction: How the script interacts with the user through voice prompts and responses.
19. Error Handling: The mechanism for detecting and responding to errors or exceptions that may occur during script execution.

It begins by importing several essential Python libraries to facilitate its various functionalities. These libraries include PyAudio for audio input, Google Translate for text translation, VADER SentimentIntensityAnalyzer for sentiment analysis, SpeechRecognition for speech recognition, gTTS (Google Text-to-Speech) for generating speech output, the 'os' module for system operations, and pyttsx3 for configuring and generating speech output. Next, the script initializes the text-to-speech engine using pyttsx3 and selects a specific voice for speech synthesis. This choice enables the script to provide spoken responses with a particular voice, enhancing user interaction. The core functionality of the It revolves around microphone access and speech recognition. Using the SpeechRecognition library, captures audio input from the user's microphone. It commences by politely prompting the user with a spoken message, asking how the movie was. Then, it adjusts for ambient noise, ensuring that the subsequent audio recording is clear. Following noise reduction, It waits for the user's response and records the audio. Upon capturing the user's response, the script attempts to transcribe the spoken words into text using Google's speech recognition service. It lowers the text to lowercase to ensure uniform processing. To retain the user's sentence for reference or future analysis, It stores the transcribed text in a list and writes it to a file named "record.txt." This file serves as a record of user interactions. It employs a predefined dictionary, "sample_data," for colloquial word mapping. It iterates through the transcribed text, replacing colloquial Tamil words with their English equivalents. This step ensures that the sentiment analysis and translation processes are applied to a standardized text. Google's translation service, accessed through the "googletrans" library, translates the standardized text from Tamil to English. This translation is essential for subsequent sentiment analysis, as it provides an English version of the user's input. The sentiment analysis is performed using the VADER Sentiment Intensity Analyzer. For each sentence, the script calculates polarity scores, including positive, neutral, and negative scores, which collectively indicate the sentiment of the text. Based on the compound sentiment score derived from the sentiment analysis, the script

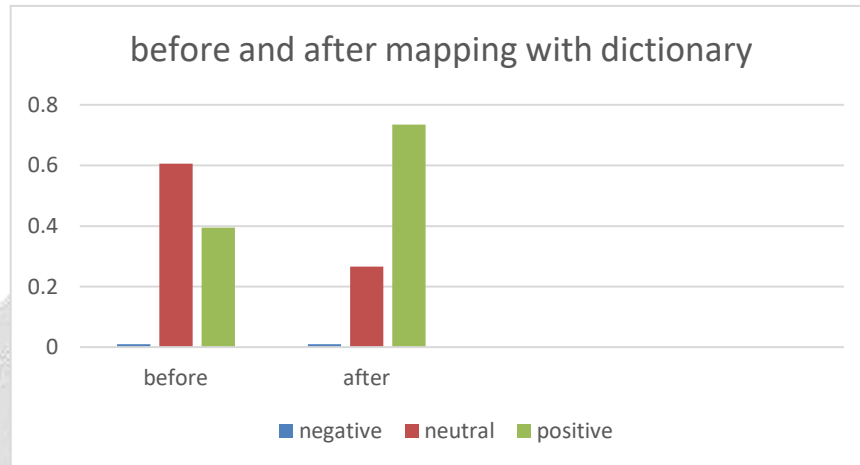
generates a response message. If the compound score is positive, it responds with a positive message. If the score is neutral, it responds neutrally, and if negative, it offers a message of comfort to the user. Finally, It converts the response message into speech using gTTS, saves it as an "output.mp3" file, and plays it using the system's default media player. This last step provides immediate audio feedback to the user, offering an engaging and user-friendly interaction with the sentiment analysis system.

Languages:

- Python (packages and libraries required)

Tools:

- Google collab
- Visual studio code



4. ADVANTAGES

Voice-over sentiment analysis for colloquial Tamil in a movie review system offers several advantages. Firstly, it enables the system to understand and analyze the sentiment of reviews spoken in colloquial Tamil, which is crucial for accurately gauging audience opinions. This is especially important because colloquial language often contains nuances, idiomatic expressions, and slang that may not be present in formal language. Secondly, utilizing Python for this task provides a powerful and flexible platform for implementing sentiment analysis algorithms. Python's extensive libraries, such as NLTK (Natural Language Toolkit) Additionally, a colloquial movie review system in Tamil can cater to a wider audience, including those who may not be proficient in formal or written Tamil. This inclusivity enhances user engagement and ensures that the system captures a broader spectrum of opinions. Furthermore, sentiment analysis can be used to generate valuable insights for filmmakers and producers. Understanding audience sentiment can guide them in making improvements or adjustments to their content, leading to more successful productions. Overall, employing voice-over sentiment analysis in a colloquial Tamil movie review system using Python empowers the system to accurately interpret and respond to audience feedback. This not only enhances user experience but also provides valuable feedback for content creators, ultimately contributing to the improvement and success of Tamil-language films.

5. CONCLUSION

To summarize, In summary, this allows users to provide colloquial Tamil movie reviews via voice input, translate and analyze the sentiment of the review in English, and respond with a spoken message indicating whether the review is positive, neutral, or negative. It can be further enhanced by refining sentiment analysis, expanding the colloquial word mapping, and improving user interaction and error handling. a foundation for voice-based sentiment analysis of Tamil movie reviews, further development, and refinement are needed to make it robust and accurate in handling colloquial language nuances. Real-world data integration and model improvements are key areas for future work to make this system a valuable tool for Tamil movie enthusiasts and reviewers. It establishes a voice-based sentiment analysis system tailored for colloquial Tamil movie reviews. This system enables users to express their opinions naturally through spoken language and offers immediate feedback on the sentiment of their reviews. Several key components, including audio input processing, speech recognition, translation, sentiment analysis, and text-to-speech synthesis, work together to create

a seamless user experience. It successfully transcribes user-spoken Tamil sentences, translates them into English, and analyzes their sentiment using the VADER Sentiment Intensity Analyzer. Users receive spoken feedback regarding whether their movie review is positive, neutral, or negative, enhancing their interaction with sentiment analysis technology. The project introduces a dynamic and engaging voice-based sentiment analysis system designed specifically for colloquial Tamil movie reviews. In an era where technology increasingly interfaces with everyday life, this project aims to bridge the gap between spoken language and automated sentiment analysis. It offers users the opportunity to articulate their thoughts and feelings about movies using their natural spoken words.

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