Movie Review Analysis based on sentiment using Text-Processing API.

Project by :

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1. **Introduction :**
   1. **Overview :**

Sentiment Analysis is a major subject in machine learning which aims to extract subjective information from the textual reviews. The field of sentiment of analysis is closely tied to natural language processing and text mining. It can be used to determine the attitude of the reviewer with respect to various topics or the overall polarity of review. Using sentiment analysis, we can find the state of mind of the reviewer while providing the review and understand if the person was “happy”, “sad”, “angry” and so on. In this project we aim to use Sentiment Analysis on a set of movie reviews given by reviewers and try to understand what their overall reaction to the movie was, i.e. if they liked the movie or they did not like it.

* 1. **Purpose :**

Movie reviews are an important way to gauge the performance of a movie. While providing a numerical/stars rating to a movie tells us about the success or failure of a movie quantitatively, a collection of movie reviews is what gives us a deeper qualitative insight on different aspects of the movie. A textual movie review tells us about the strong and weak points of the movie and deeper analysis of a movie review can tell us if the movie in general meets the expectations of the reviewer. We aim to utilize the relationships of the words in the review to predict the overall polarity of the review.

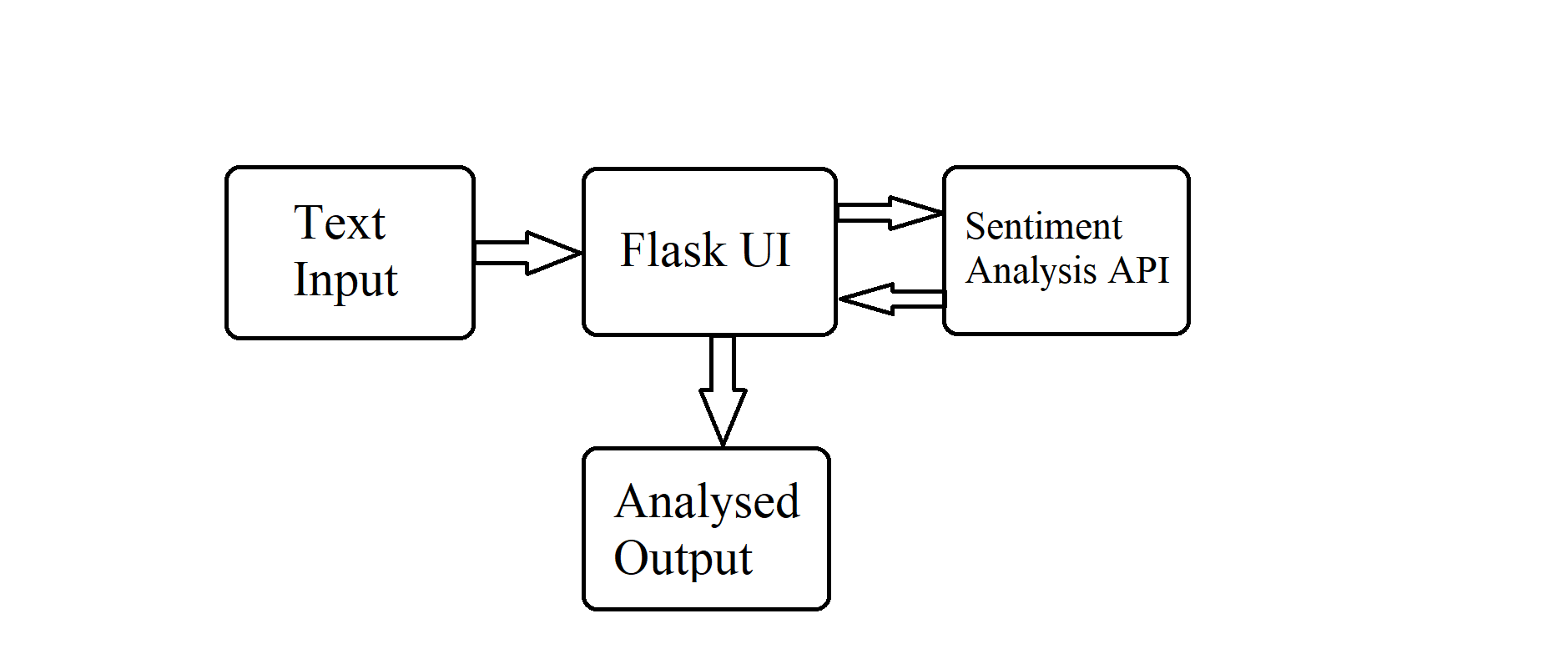
1. **Literature Survey :**
   1. **Existing Problem :**

There are numerous platforms where movie reviews are discussed by the general audience. These reviews are huge in number and it is almost impossible for a person to go through all of them at once, moreover it can get confusing for the person to understand the final feedback that one wants to convey. Microblogging sites and social media are often used to post or share movie reviews. So, it becomes really important to understand the final sentiment of the review to help the filmmakers to improve their way of filmmaking. Currently there are no websites that provide the sentiment analysis for individual reviews.

* 1. **Proposed Solution :**

The concept of sentiment analysis would help filmmakers understand the reviews in a better way. The entire sentiment can be utilized in understanding the final review of an individual for the movie. The website that we provide takes the review as input into the text field provided. An API call is made to the server which returns the analysed sentiment. Based on the response the appropropriate picture (positive/negative/neutral) is displayed.

1. **Theoretical Analysis :**
   1. **Block Diagram :**

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* 1. **Hardware/Software Designing :**

Hardware requirements include a computer(PC/Laptop) to run the application on the localhost.

Software requirements include :

>Flask

>Editor (VSCode)

>RapidAPI account and subscription

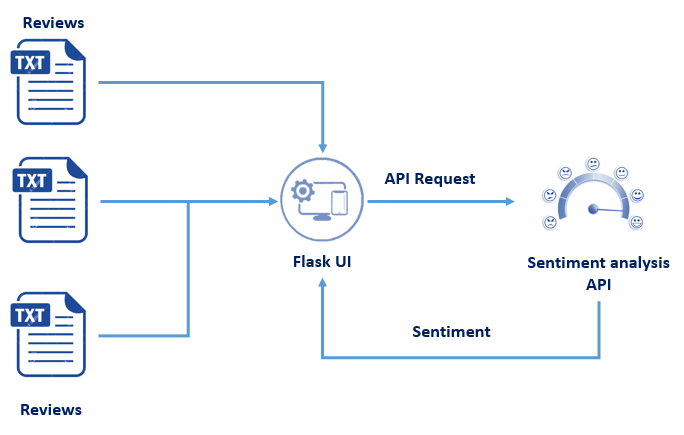
Flask is a micro [web framework](https://en.wikipedia.org/wiki/Web_framework) written in [Python](https://en.wikipedia.org/wiki/Python_(programming_language)). This is used to make the required API calls to the RapidAPI subscribed and render the required HTML file based on the analyzed output. The webpages rendered are written in HTML and are styled using CSS.

1. **Experimental Investigations :**

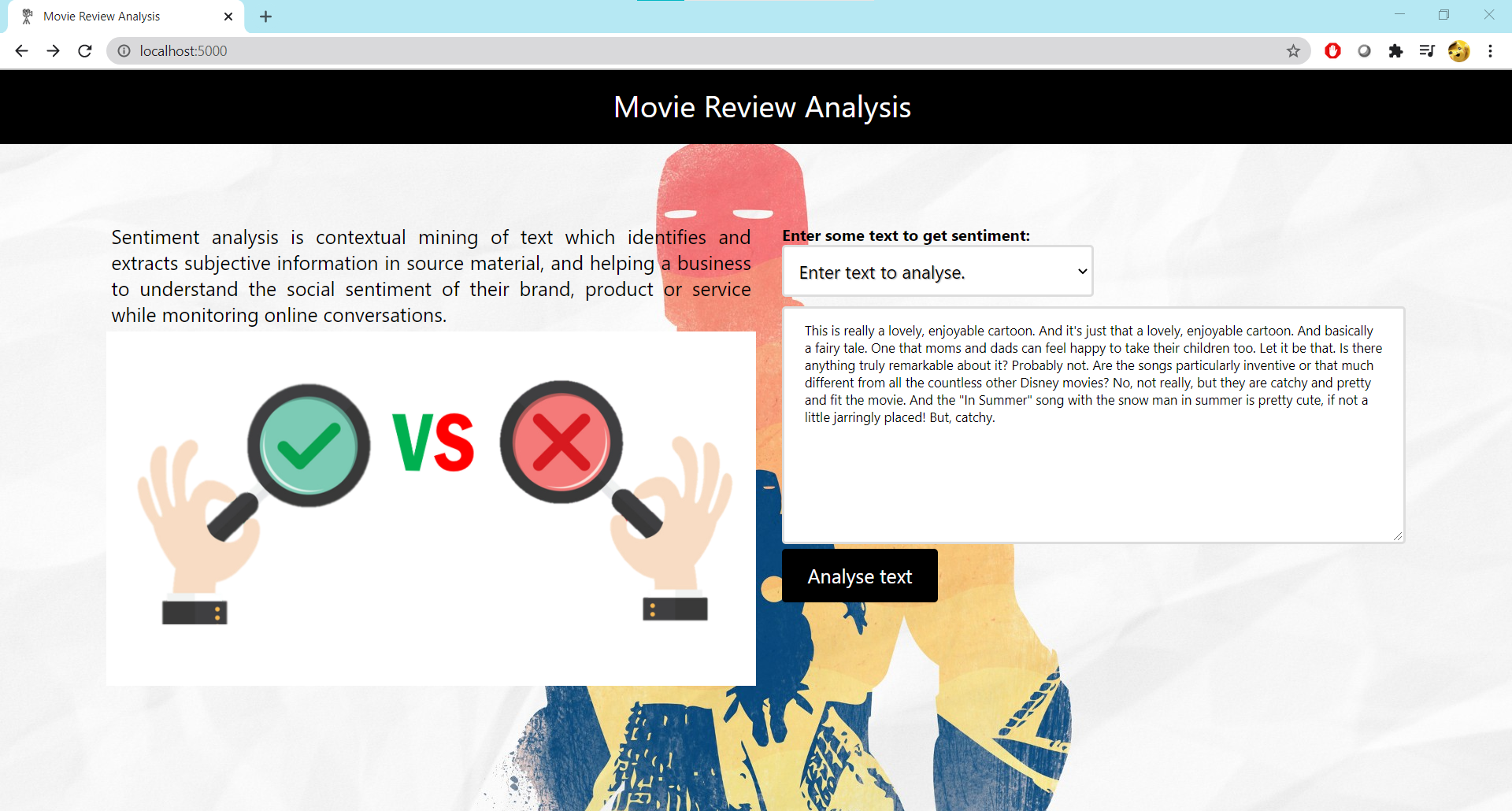
A movie review allows the viewer or anyone to know and understand the whole picture of the movie. In fact, it helps the viewers so much to let them to know if it is really worth to watch that movie.Making a movie review is quite critical because it gives impact not only to the movie but whole production, including all people involved in the making of the movie.Since everyone or anyone can do such movie reviews, contents in the movie review are different. Some could be pleasing, giving good impact to the movie and others may probably give bad criticism to the movie thus giving unreliable impact to the movie.

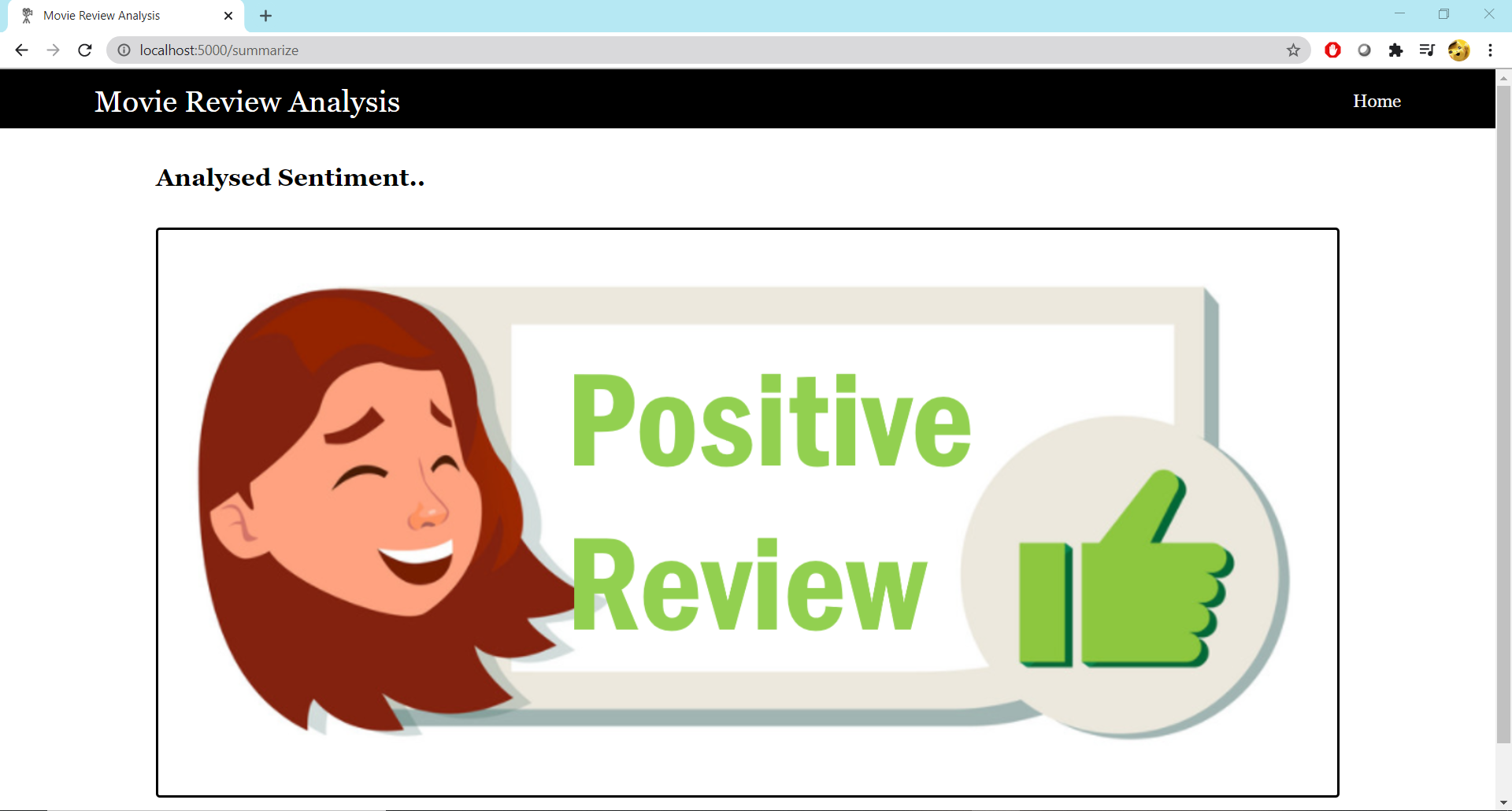
Sentiment analysis is the process of detecting positive or negative sentiment in text. Since people express their thoughts and feelings more openly than ever before, sentiment analysis is becoming an essential tool to monitor and understand that sentiment. Automatically [analyzing the feedback](https://monkeylearn.com/blog/customer-feedback-analysis/), such as opinions in survey responses and social media conversations, allows filmmakers to learn what makes the audience happy or frustrated, so that they can tailor the movies and scripts to meet their needs.

1. **Flowchart :**

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1. **Result :**

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1. **Advantages and Disadvantages :**
   1. **Advantages :**

* Emotion detection Sentiment analysis is sometimes considered as an NLP task for discovering opinions about an entity; and because there is some ambiguity about the difference between opinion, sentiment and emotion, they defined opinion as a transitional concept that reflects attitude towards an entity.
* The sentiment reflects feeling or emotion while emotion reflects attitude. By using sentiment analysis, you gauge how customers feel about different areas of your business without having to read thousands of customer comments at once. If you have thousands of feedback per month, it is impossible for one person to read all of these responses.
* By using sentiment analysis and automating this process, you can easily drill down into different customer segments of your business and get a better understanding of sentiment in these segments.
* Sentiment analysis helps the movie makers to understand the review from the public in all aspects of the movie by providing the movie rating to the movie like positive, negative or neutral.
  1. **Disadvantages :**
* While sentiment analysis is useful, it is not a complete replacement for reading survey responses. Often, there are useful nuances in the comments themselves. Where sentiment analysis can help you further is by identifying which of these comments you should read.
* Word ambiguity is another pitfall you’ll face working on a sentiment analysis problem. The problem of word ambiguity is the impossibility to define polarity in advance because the polarity for some words is strongly dependent on the sentence context.
* Complex emotions, sensitive feelings, different opinions cannot be detected by sentiment analysis.

1. **Applications :**

* Reputation Management - Social Media Monitoring - Brand Monitoring.
* Market Research, Competitor Analysis.
* Product Analytics.
* Customer Analysis.
* Customer Support Analysis.

1. **Conclusion :**

In conclusion, the application is really helpful in analysing the sentiment of the review entered. The application has a simple UI that requires the user to enter the review into the textarea provided. The review entered is sent for processing and the output is displayed within seconds. The sentiment analysis based on text helps filmmakers understand the thoughts that the audience have after watching the movie and the areas of expertise and also the areas of improvement. The entire application proves to be helpful to both the critic(audience) as well as the filmmakers.

1. **Future Scope :**

Our application can be really helpful for filmmakers who respect and support constructive criticism from the audience. Each review can be summarized as positive, negative or neutral. This ensures that the critic has the freedom to express their views while the filmmakers make use of the sentiment associated with the review to inculcate it in their future projects. Sentiment analysis can prove to be really helpful. This application can be extended to other domains such as the music industry or any other product that involves a consumer and producer.

1. **Bibliography :**

* <https://flask.palletsprojects.com/en/1.1.x/>
* <https://www.w3schools.com/html/>
* <https://www.w3schools.com/css/>

1. **Appendix :**
   1. **Source code : (app.py)**

**from flask import Flask, request, render\_template**

**import numpy as np**

**import re**

**import requests**

**import json**

**app = Flask(\_\_name\_\_)**

**def check(output):**

**url = "https://japerk-text-processing.p.rapidapi.com/sentiment/"**

**payload = {"text": output}**

**print(payload)**

**headers = {**

**'content-type': "application/x-www-form-urlencoded",**

**'x-rapidapi-key': "365608f06amsh59ba7850bc77db5p11cdfcjsn4395ecae216f",**

**'x-rapidapi-host': "japerk-text-processing.p.rapidapi.com"**

**}**

**response = requests.request("POST", url, data=payload, headers=headers)**

**print(response.text)**

**value = response.text**

**output=json.loads(value)**

**return response.json()**

**#home page**

**@app.route('/')**

**def summarizer():**

**return render\_template('summarizer.html')**

**#summarizer page**

**@app.route('/summarize', methods=['POST'])**

**def summarize():**

**output = request.form['output']**

**output=re.sub("[^a-zA-Z.,]"," ",output)**

**print(output)**

**essay = check(output)**

**print(type(essay['label']))**

**if essay['label'] == "pos":**

**output="Positive review"**

**elif essay['label'] == "neg":**

**output="Negative review"**

**else:**

**output="Neutral Review"**

**#print(max(essay['probability'], key=essay.get))**

**return render\_template('summary.html',essay=essay,prediction\_text='{}'.format(output))**

**if \_\_name\_\_ == "\_\_main\_\_":**

**app.run(debug=True)**