

Unveiling Sentiments in Political Speeches

Introduction:

Narendra Damodardas Modi is an Indian politician serving as the 14th Prime Minister of India since 2014. He was the Chief Minister of Gujarat from 2001 to 2014 and the Member of Parliament for Varanasi. Transcript of the speeches given by Narendra Modi made publicly available. "Unveiling Sentiments in Political Speeches" explores the intricate emotions and underlying intentions woven into the fabric of political rhetoric. This study delves into the art of persuasion, decoding the subtle cues, tones, and word choices employed by speakers to sway public opinion. By analyzing speeches through a socio-emotional lens, this research sheds light on how leaders manipulate sentiment to advance their agendas, fostering a deeper understanding of the complex interplay between language, emotion, and politics.

Using NLP (Natural Language Processing) techniques and transformer models for various tasks has revolutionized how we process and understand human language. Transformers, in particular, have become the cornerstone of many NLP applications due to their ability to handle sequential data efficiently.

Literature Survey:

Understanding Emotional Content in Political Speeches:

Rhetorical Analysis and Persuasion Techniques:

Explore how political figures employ rhetoric to evoke emotions, persuade audiences, and influence public opinion. This includes examining speeches from historical figures like Abraham Lincoln, Winston Churchill, and modern leaders such as Barack Obama or Angela Merkel.

Emotion Detection and Sentiment Analysis:

Discuss methodologies used in sentiment analysis, natural language processing, and machine learning to detect emotional cues in texts. This involves both manual and computational approaches to identify sentiment polarity, intensity, and the impact of linguistic features on emotional content.

Psychological Aspects and Impact of Emotions in Politics:

Emotional Appeals and Voter Behavior:

Investigate how emotional appeals in political speeches impact voter perceptions, attitudes, and behavior. Studies exploring the correlation between emotions evoked by speeches and subsequent voting patterns provide valuable insights.

Emotional Intelligence of Political Leaders:

Delve into research that examines the emotional intelligence of political leaders and its influence on their ability to connect with constituents, navigate crises, and maintain public support.

Computational Linguistics and Technology:

Computational Approaches to Analyzing Speeches:

Highlight advancements in computational linguistics, including sentiment analysis algorithms, topic modeling, and sentiment lexicons, to dissect political speeches and extract emotional tones.

Applications of Natural Language Processing (NLP):

Discuss the practical applications of NLP techniques in analyzing large volumes of political speeches, identifying sentiment trends, and predicting public responses to political rhetoric.

Cross-Cultural and Historical Perspectives:

Cultural Variations in Emotional Expression:

Investigate how cultural differences shape the emotional content and reception of political speeches. Comparing speeches across cultures and historical periods can reveal interesting insights.

Historical Analysis of Emotional Language in Politics:

Examine how emotional language has been utilized in different historical contexts to rally support, address crises, or justify political actions.

Ethical Considerations and Challenges:

Ethical Implications of Emotional Manipulation:

Discuss the ethical dilemmas associated with intentionally evoking emotions in political speeches for manipulation or exploitation purposes.

Challenges in Automated Sentiment Analysis:

Highlight limitations and challenges in accurately capturing nuanced emotions and sentiments through automated analysis, considering the complexities of language and context.

By exploring these facets, a comprehensive literature survey on "Unveiling Sentiments in Political Speeches" could provide a rich understanding of the multifaceted interplay between emotions, language, and politics.

Ideation Phase
Empathize & Discover

Date	4th November 2023
Team ID	Team-591827
Project Name	Unveiling Sentiments in Political Speeches
Maximum Marks	4 Marks

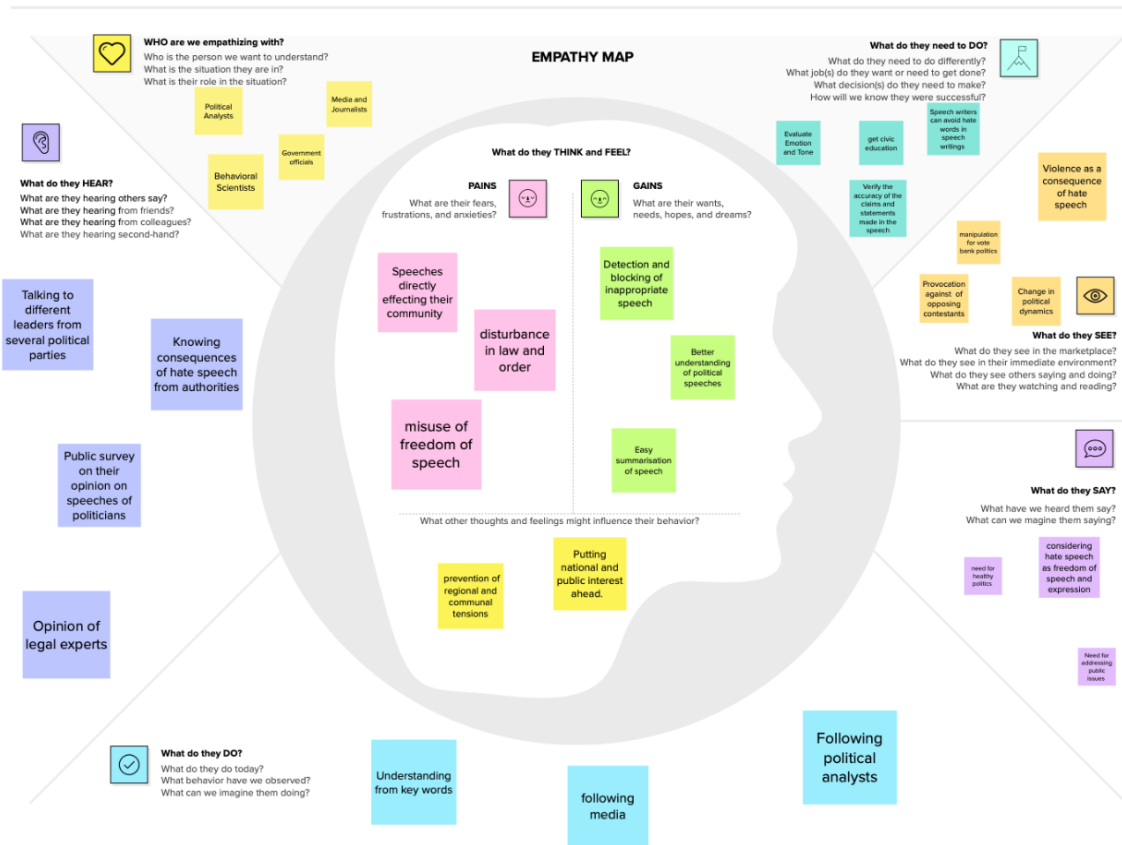
Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes. It is a useful tool to help teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

Reference:

<https://app.mural.co/t/sentimentanalysis0775/m/sentimentanalysis0775/1698759355159/606232745f57dfe79d33ede37eb9729fa85d36c2?sender=u8dce79a73397b4bd3e846902>

Empathy Map



Ideation Phase

Brainstorm & Idea Prioritization Template

Date	5th November 2023
Team ID	Team-591827
Project Name	Unveiling Sentiments in Political Speeches
Maximum Marks	4 Marks

Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team

to participate in the creative thinking process that leads to problem solving.

Prioritizing

volume over value, out-of-the-box ideas are welcome and built upon, and all participants are

encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Use this template in your own brainstorming sessions so your team can unleash their


imagination and start shaping concepts even if you're not sitting in the same room.

Reference:

<https://app.mural.co/t/sentimentanalysis0775/m/sentimentanalysis0775/1698845343781/c45cc0389cf5a3aad9b0e3b8436b211c896af01f?sender=u74c3a46d336147f5938f8111>

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Template



Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

10 minutes to prepare

1 hour to collaborate

2-8 people recommended

→

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

1

Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

2

Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

3

Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

Open article →

1

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

5 minutes

PROBLEM

How might we Summarize political speeches?

"Unveiling Sentiments in Political Speeches" explores the intricate emotions and underlying intentions woven into the fabric of political rhetoric. This study delves into the art of persuasion, decoding the subtle cues, tones, and word choices employed by speakers to sway public opinion. By analyzing speeches through a socio-emotional lens, this research sheds light on how leaders manipulate sentiment to advance their agendas, fostering a deeper understanding of the complex interplay between language, emotion, and politics.

Key rules of brainstorming

To run a smooth and productive session

Stay in topic.

Encourage wild ideas.

Defer judgment.

Listen to others.

Go for volume.

If possible, be visual.

Step-2: Brainstorm, Idea Listing and Grouping

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

TIP

You can select a sticky note and hit the pencil (switch to sketch) icon to start drawing!

Dhana Rahul Sai

★★★
government guidelines on how to write scripts for speeches

★
Ban political speeches

★
Strict rules saying no religion on in speeches

★★★
only recorded speeches so that they can be censored

Sahithi

★
Comparison of two different speeches given by the same speaker

★★★
Analyzing the audience reaction to the speech

★★★
Using social media analytics to track public reactions

★★★★
imposing fines on violators of government guidelines

Laxmi Sri Aditya

★
Correct interpretation of the speech if translator is used

★★★★
Identifying the persuasive techniques that have been used

★★★★
Analysing contextual nuances so it can deepen the understanding of the message.

★★★
Asking the speaker to analyse their speech

Srinivasa Taaran

★★★★
Being careful with few prohibited key words

★★★★★
Using NLP to analyse sentiment in speeches

★★★
Develop a tool that creates a large card based on common political buzzwords or phrases.

★★★
Investigate how language in political speeches changes over time

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

🕒 20 minutes

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Technical

Using NLP to analyse sentiment in speeches

Develop a tool that creates a bingo card based on common political buzzwords or phrases.

Analysing contextual nuances so it can deepen the understanding of the message.

Precautions and guidelines

government guidelines on how to write scripts for speeches

only recorded speeches so that they can be censored

Ban political speeches

Strict rules saying no religion on in speeches

Being careful with few prohibited key words

Imposing fines on violaters of government guidelines

Analytical

Asking the the speaker to analyse their speech

Analyzing the audience reaction to the speech

Using social media anytics to track public reactions

Analysing contextual nuances so it can deepen the understanding of the message.

Identifying the persuasive techniques that have been used

Research

Investigate how language in political speeches changes over time

Comparision of two different speeches given by the same speaker

Step-3: Idea Prioritization

4

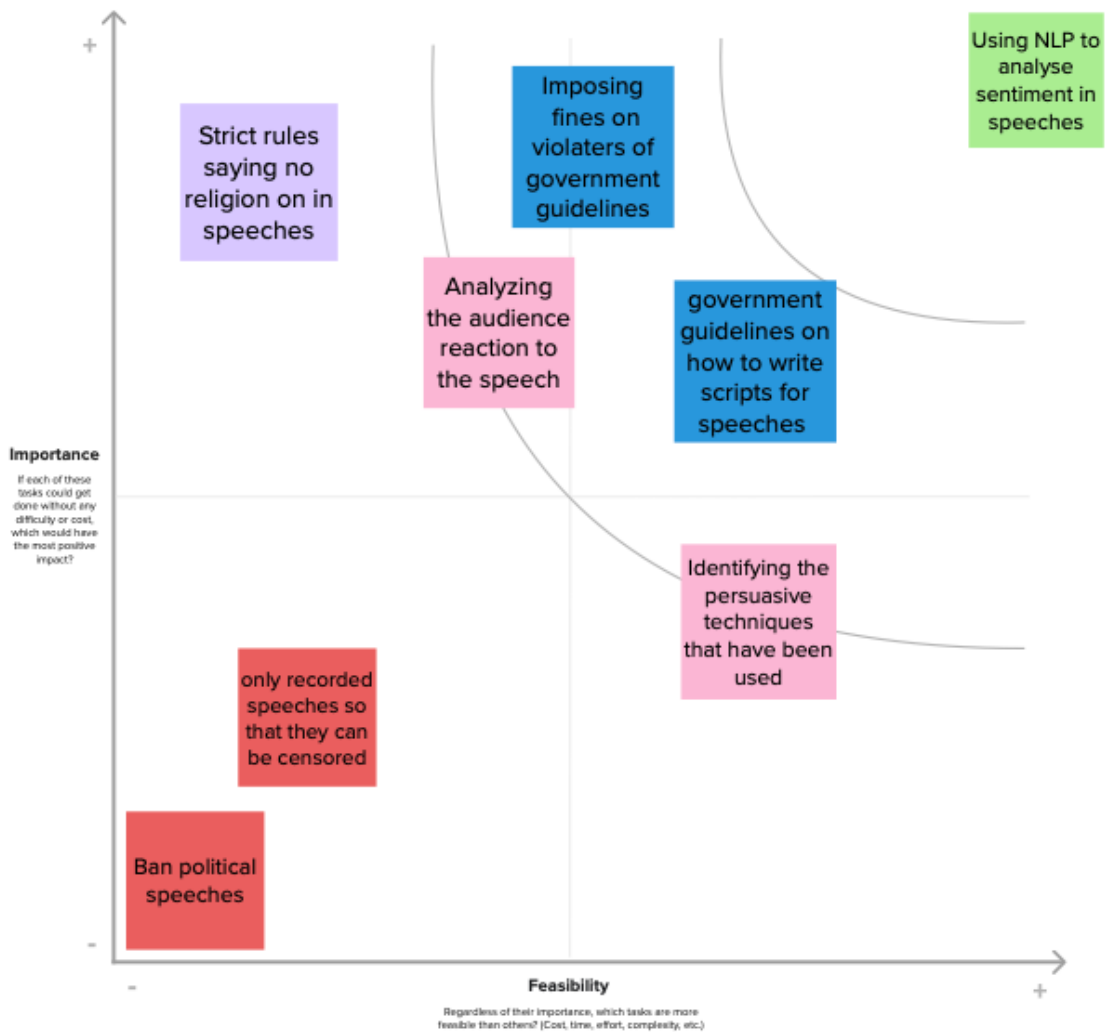
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕒 20 minutes

TIP

Participants can use their cursor to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H** key on the keyboard.



Project Design Phase-I
Proposed Solution Template

Date	5th November 2023
Team ID	Team-591827
Project Name	Unveiling Sentiments in Political Speeches
Maximum Marks	2 Marks

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Title :explores the intricate emotions and underlying intentions woven into the fabric of political rhetoric.
2.	Idea / Solution description	Developing an automated model to analyse the sentiments in political speeches using Natural Language Processing. Here, key words are used to analyse the sentiments and tone. This will reduce effort to analyse the speeches and gives better insights.
3.	Novelty / Uniqueness	Use of Natural Language Processing(NLP) for analysing the sentiments in political speeches using hate words and key words.
4.	Social Impact / Customer Satisfaction	Significant decrease in hate speech, better understanding of political speeches, prevents from getting manipulated
5.	Business Model (Revenue Model)	Provides access to in-depth analyses of political speeches through a subscription service that uses sophisticated sentiment analysis and rhetorical device identification. Members participate in a lively community that promotes intelligent dialogue about the complexities of political communication.
6.	Scalability of the Solution	This can be embedded into social media platforms , with changes can be used to understand national interests.

Project Design Phase-I
Proposed Solution Template

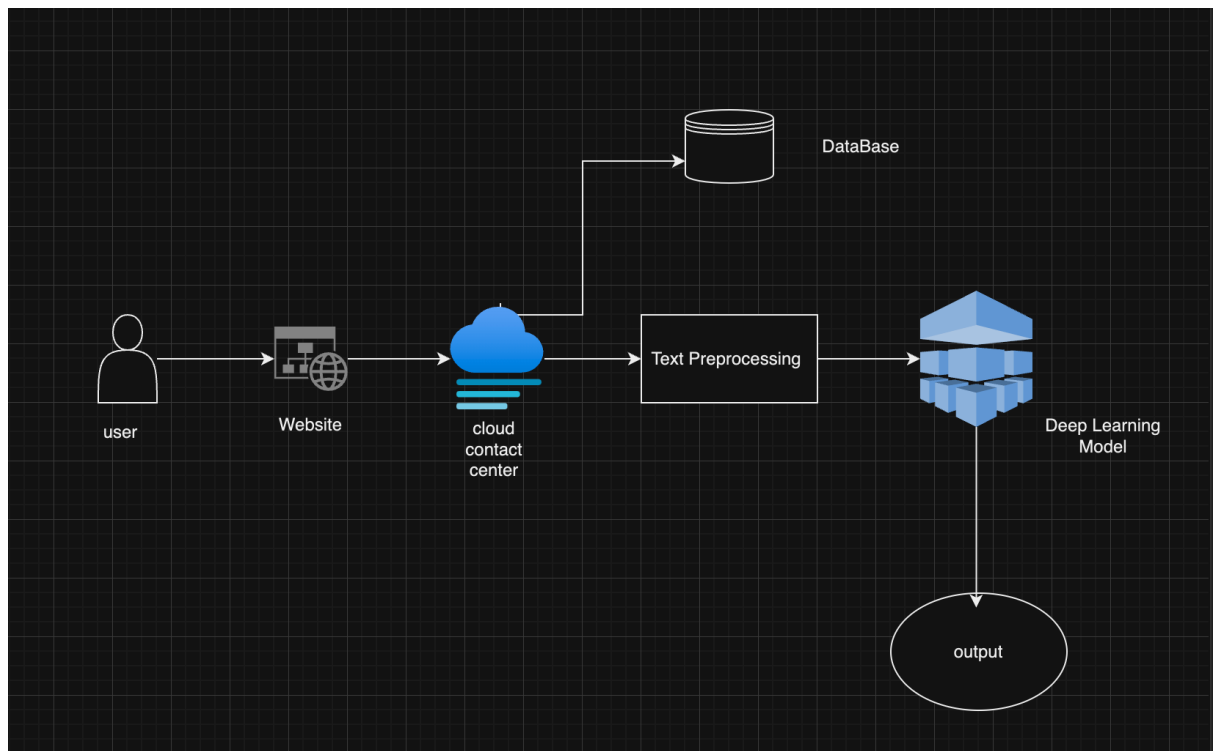
Date	15th November 2023
Team ID	Team-591827
Project Name	Unveiling Sentiments in Political Speeches
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behaviour, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

Solution Architecture Diagram:



Reference:

<https://drive.google.com/file/d/12FPTod-qopGCjdT-SrDm6lBHLMGKlmHc/view?usp=sharing>

Project Design Phase-II
Proposed Solution Template

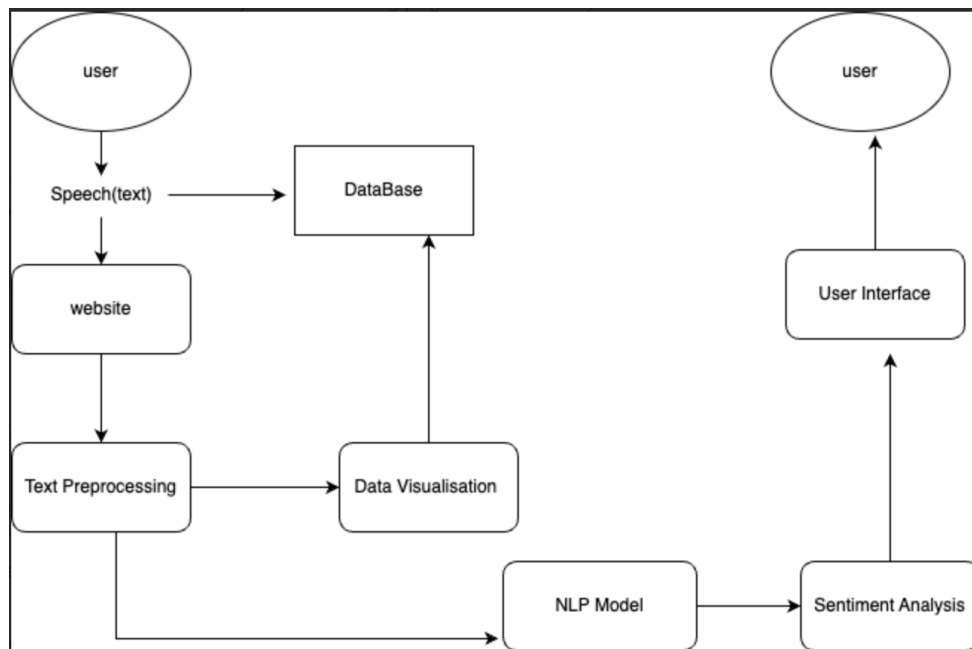
Date	16th November 2023
Team ID	Team-591827
Project Name	Unveiling Sentiments in Political Speeches
Maximum Marks	4 Marks

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

Reference:

<https://drive.google.com/file/d/1rZhs2aQVC8S5GA4bwvr1FBz817DZjcZR/view?usp=sharing>

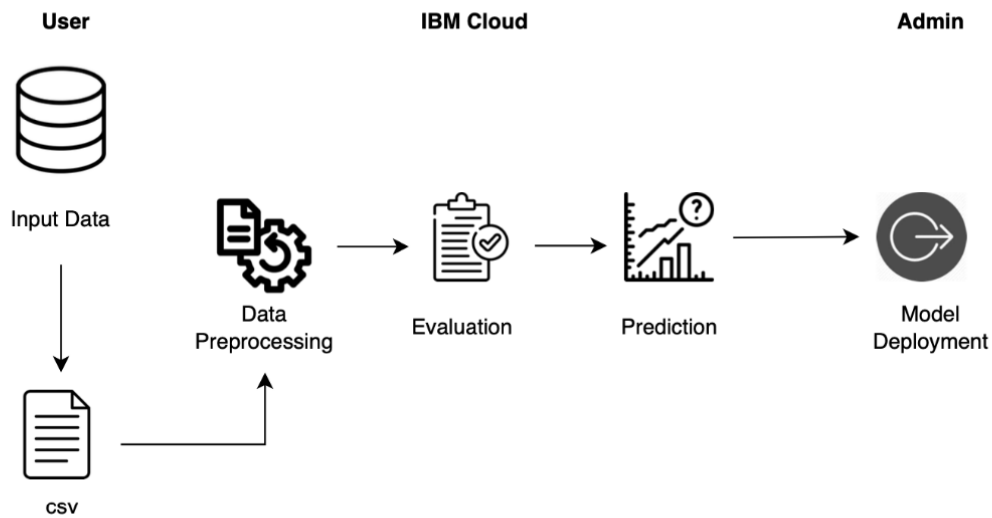


Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	20th November 2023
Team ID	Team-591827
Project Name	Unveiling Sentiments in Political Speeches
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



Guidelines:

1. Include all the processes (As an application logic / Technology Block)
2. Provide infrastructural demarcation (Local / Cloud)

3. Indicate external interfaces (third party API's etc.)
4. Indicate Data Storage components / services
5. Indicate interface to machine learning models (if applicable)

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Handles users registration, validation, and creation of users account. e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS,
2.	Application Logic-1	Logic for a process in the application	Python
3.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
4.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
5.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
6.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Python's Flask

2.	User Friendly Interface	This provides an engaging or intuitive experience for users interacting with the application.	HTML, CSS, Bootstrap, JavaScript, UI etc.
3.	Scalability/Availability	Justify the scalability of architecture (3 – tier, Micro-services)	Load Balancers, Docker, Caching, Database Replication, Scalable architecture designs.
4.	Third party integrations	Involves incorporating features or services from an external provider into existing application.	Bootstrap API

Project Planning Phase
Project Planning Template
(ProductBacklog, Sprint
Planning,Stories, Story
points)

Date	21st November 2023
Team ID	Team-591827
Project Name	Unveiling Sentiments in Political Speeches
Maximum Marks	8 Marks

Product Backlog,Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint -1	Best Algorithm Finding	USN-1	Trying out all the available algorithms in order to find which one gives the best accuracy rate.	4	High	N. Dhana Rahul Sai
Sprint -1	Finding correlations	USN-2	We have a huge number of 21 parameters which can be hectic to handle, hence we shall find correlated columns and eliminate them.	3	High	G. Laxmi Sri Aditya
Sprint -2	WebUI development	USN-3	We need a webUI so that the users can give their inputs and find predictions accordingly.	4	High	V. Srinivasa Taaran
Sprint -2	Defining Description	USN-4	A detailed information about the application, its uses, and its application should be available for the users in order to understand better about the model.	2	Medium	N. Dhana Rahul Sai

Sprint-3	Contact us page	USN-5	In order to allow the users to post further queries, a contact us part of the page must be made available with the details of our team in it and how to contact us.	4	Medium	A Sahithi
Sprint-4	Back Navigator	USN-6	A button must be provided for the users to return to the predictor_inputs page to start predicting from the model again	2	Low	A Sahithi

ProjectTracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date(Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date(Actual)
Sprint-1	9	6 Days	16 October 2023	21 October 2023	9	21 October 2023
Sprint-2	6	6 Days	23 October 2023	28 October 2023	6	28 October 2023
Sprint-3	9	6 Days	30 October 2023	4 November 2023	9	4 November 2023
Sprint-4	7	6 Days	7 November 2023	11 November 2023	7	11 November 2023

Velocity:

Duration/velocity:

24 days / 4 = 6

Epic

> WebUI development

> Logo requirement

> Defining Description

> Contact us page

> Further contraction of parameters

> Back Navigator

> Reset button

+ Create epic

▼ FH Sprint 3 29 Oct – 5 Nov (3 issues)

0 0 6 Complete sprint

FH-14 In order to allow the users to post further queries, a contact us part of th... CONTACT US... DONE 3 SM

FH-16 it is still a big number of inputs for the users to deal with, hence, we mus... FURTHER CO... DONE 2

FH-18 A button must be provided for the users to return to the predictor_input... BACK NAVIGA... DONE 1 AK

+ Create issue

▼ FH Sprint 4 Add dates (2 issues)

0 0 4 Start sprint

FH-20 A reset button may help the user to reset all the values entered, thus ma... RESET BUTTON DONE 1 AC

FH-22 Create a division in the result page that displays the suggestion of s... SUGGESTION... DONE 3 SM

+ Create issue

2 issues | Estimate: 0

TO DO

IN PROGRESS

DONE 9 ✓

Trying out all the available algorithms in order to find which one gives the best accuracy rate.
Trying out all the available algorithms in order to find which one gives the best accuracy rate.

BEST ALGORITHM FINDING

FH-3 ✓ 4

We have a huge number of 21 parameters which can be hectic to handle, hence we shall find correlated columns and eliminate them.

FH-5 ✓ 3 AK

we shall find correlated columns

Model Performance Test

Date	20 November 2023
Team ID	Team-591827
Project Name	Unveiling Sentiments in Political Speeches
Maximum Marks	10 Marks

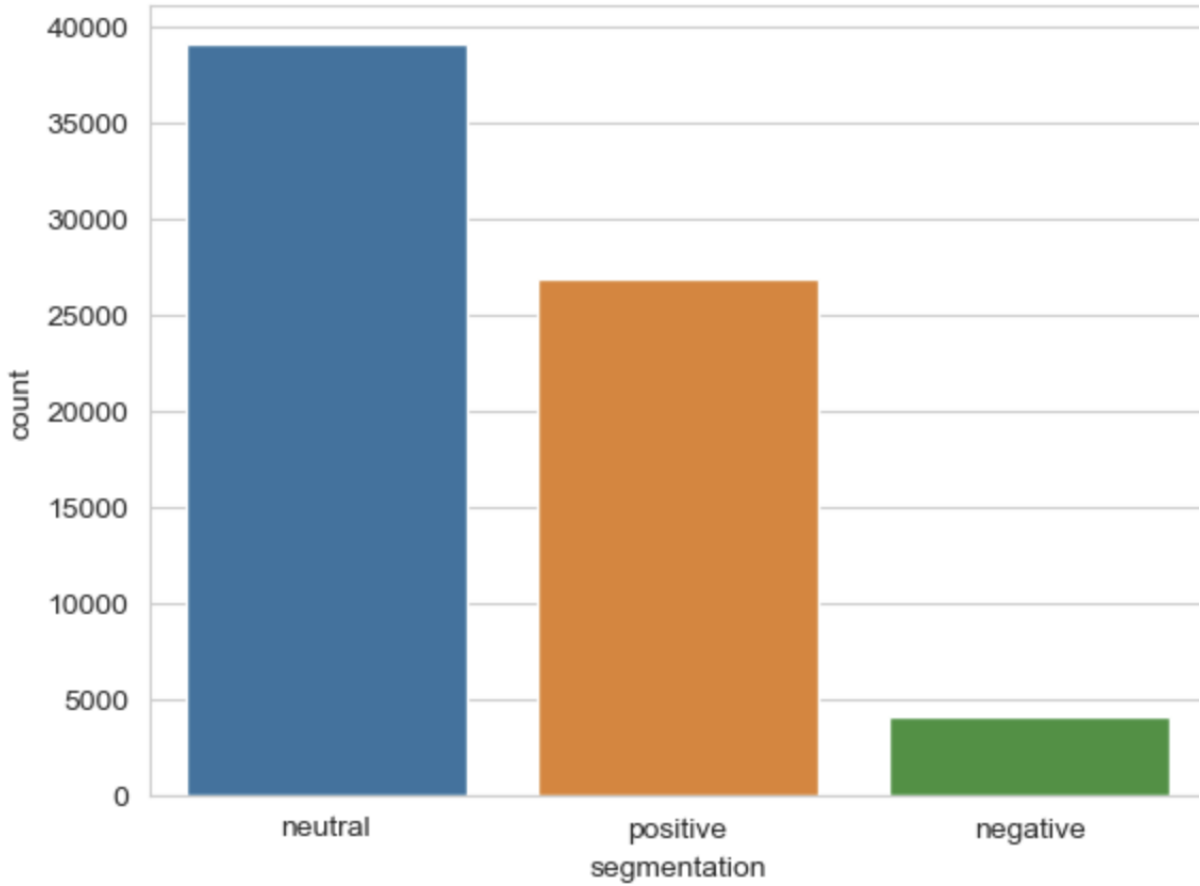
Model Performance Testing:

Project team shall fill the following information in model performance testing template.

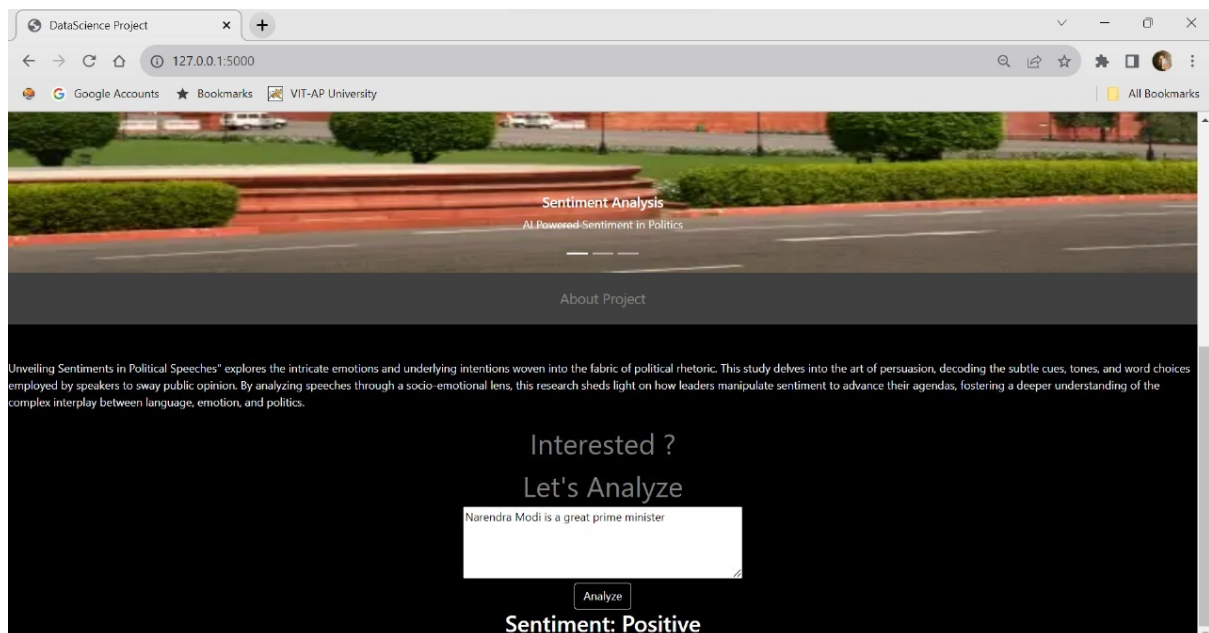
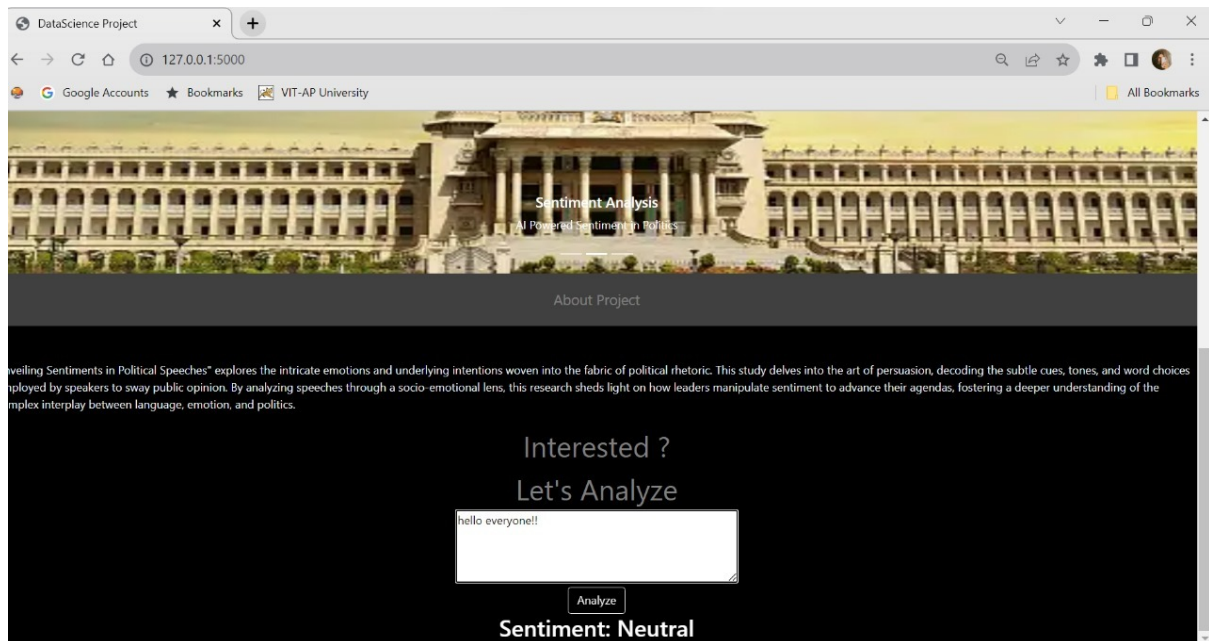
S.N o	Parameter	Values	Screenshot																																			
1.	Segmentation	negative : 4102 neutral : 39087 positive : 26811	<div>segmentation</div> <div>segmentation</div> <table><tr><td>negative</td><td>4102</td></tr><tr><td>neutral</td><td>39087</td></tr><tr><td>positive</td><td>26811</td></tr></table>	negative	4102	neutral	39087	positive	26811																													
negative	4102																																					
neutral	39087																																					
positive	26811																																					
2.	Accuracy	Training Accuracy - 82% Validation Accuracy - 82%	<div>Validation Accuracy: 0.82%</div> <div>Classification Report:</div> <table><tr><td></td><td>precision</td><td>recall</td><td>f1-score</td><td>support</td></tr><tr><td>negative</td><td>0.97</td><td>0.11</td><td>0.20</td><td>803</td></tr><tr><td>neutral</td><td>0.92</td><td>0.81</td><td>0.86</td><td>7802</td></tr><tr><td>positive</td><td>0.72</td><td>0.93</td><td>0.81</td><td>5395</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.82</td><td>14000</td></tr><tr><td>macro avg</td><td>0.87</td><td>0.62</td><td>0.62</td><td>14000</td></tr><tr><td>weighted avg</td><td>0.84</td><td>0.82</td><td>0.80</td><td>14000</td></tr></table>		precision	recall	f1-score	support	negative	0.97	0.11	0.20	803	neutral	0.92	0.81	0.86	7802	positive	0.72	0.93	0.81	5395	accuracy			0.82	14000	macro avg	0.87	0.62	0.62	14000	weighted avg	0.84	0.82	0.80	14000
	precision	recall	f1-score	support																																		
negative	0.97	0.11	0.20	803																																		
neutral	0.92	0.81	0.86	7802																																		
positive	0.72	0.93	0.81	5395																																		
accuracy			0.82	14000																																		
macro avg	0.87	0.62	0.62	14000																																		
weighted avg	0.84	0.82	0.80	14000																																		

3.	Confidence Score (OnlyYolo Projects)	Class Detected - NA	Not Applicable
		Confidence Score - NA	

Screenshot:



Output:



Conclusion:

The culmination of this comprehensive exploration into the sentiments entrenched within political speeches illuminates a profound tapestry of emotional, linguistic, and societal intricacies. Through the lens of diverse disciplines encompassing linguistics, political science, psychology, and computational analysis, this project has unveiled the nuanced layers that underlie the rhetoric of political communication.

The profound impact of rhetoric as a potent instrument for evoking emotions, shaping perceptions, and mobilising action is evident throughout history. From the impassioned oratory of revered historical figures to the calculated discourse of contemporary leaders, the potency of language to influence collective sentiment and action remains undeniably formidable.

Delving into the nexus of psychology and politics has highlighted the significant role emotions play in shaping voter behaviour and attitudes. The emotional intelligence exhibited by political figures emerges as a pivotal determinant in forging connections, managing crises, and sustaining public allegiance.

Furthermore, the integration of computational linguistics and sentiment analysis techniques has propelled our understanding, offering avenues to dissect and comprehend emotional undercurrents within speeches at scale. However, challenges persist in capturing the subtleties and contextual nuances of emotions, signalling a need for continued refinement and innovation in computational approaches.

The project's scope encompassed cross-cultural and historical dimensions, shedding light on the profound impact of cultural nuances and historical contexts on the emotional fabric of political discourse. Appreciating these diversities is crucial in comprehending the complex interplay between language, emotions, and sociopolitical landscapes.

As the project draws to a close, it underscores the enduring relevance and multidisciplinary nature of unravelling sentiments within political speeches. The revelations gleaned pave the way for further exploration, emphasising the imperative of nuanced understanding in decoding the language of power, persuasion, and governance.

In essence, the journey undertaken in this project signifies not merely the culmination of a study but rather a beckoning towards continued inquiry, underscoring the profound significance of sentiments within the intricate tapestry of political communication.

Future Aspects:

Absolutely, exploring the future scope after studying sentiments in political speeches could lead to various intriguing directions:

1. **Advanced Computational Analysis:**

- Refinement and development of more sophisticated sentiment analysis models integrating machine learning, deep learning, and natural language processing (NLP) techniques. Future advancements might focus on context-aware sentiment analysis, aiming to capture the intricate nuances of emotions in diverse political contexts.

2. **Real-Time Sentiment Monitoring:**

- Creation of tools for real-time sentiment monitoring during live speeches or political events. This could involve the integration of sentiment analysis algorithms with social media streams, providing instantaneous feedback on public reactions to political discourse.

3. Multimodal Sentiment Analysis:

- Expansion into analyzing multimodal data, including not just textual content but also audio-visual cues. Incorporating facial expression analysis, tone of voice recognition, and gestures could offer a more comprehensive understanding of emotional content in speeches.

4. Ethical Considerations and Bias Mitigation:

- Focus on addressing ethical considerations, such as avoiding manipulative uses of emotional language in political speeches. Additionally, efforts to mitigate biases in sentiment analysis algorithms, ensuring fair and accurate assessments across diverse demographics and cultural contexts, would be crucial.

5. Predictive Analysis and Policy Implications:

- Moving beyond retrospective analysis to predictive modeling, aiming to forecast public reactions and sentiment shifts in response to specific policy proposals or political rhetoric. This could aid in crafting more effective communication strategies for policymakers.

6. Cross-Cultural and Multilingual Analysis:

- Further exploration of emotions in political speeches across different cultures and languages to understand how emotional expression varies and its impact on diverse audiences. Developing sentiment analysis models that are adaptable and sensitive to cultural nuances would be invaluable.

7. Emotionally Intelligent AI Interfaces:

- Integrating sentiment analysis into AI-driven interfaces for political leaders, providing real-time feedback on the emotional resonance of their speeches. This could assist in tailoring messages for maximum impact and resonance with diverse audiences.

8. Interdisciplinary Collaboration and Impact Assessment:

- Encouraging collaborative efforts among experts in linguistics, psychology, political science, and technology to comprehensively assess the impact of emotional language in political communication. This collaboration could pave the way for a more holistic understanding of its implications on societies.

As technology advances and interdisciplinary collaborations deepen, the future holds promising avenues for further exploration, refinement, and ethical application of sentiment analysis in deciphering the complex interplay between emotions and political discourse.

Source code:

Coding and Solutions:

Model:

```
import pandas as pd
import numpy as np
import re
import matplotlib.pyplot as plt
import nltk
import spacy
from nltk.corpus import stopwords
from textblob import TextBlob
from wordcloud import WordCloud
from nltk.tokenize import word_tokenize
pd.options.display.max_colwidth=1000

# In[3]:
import os
for dirname, _, filenames in os.walk("/Users/dhanarahulsainadiminti/Downloads/sent_ana_dataset/Narendra Modi_data.csv"):
    for filename in filenames:
        print(os.path.join(dirname, filename))

# In[4]:

df=pd.read_csv("/Users/dhanarahulsainadiminti/Downloads/sent_ana_dataset/Narendra Modi_data.csv")
df.head()

# In[5]:

df.shape

# In[6]:

df.info()

# In[7]:

df.isnull().sum()

# In[8]:

def remove_usernames_links(tweet):
    s2 = re.sub('http://AS+|https://AS+', '', tweet)
```

```
s1=re.sub(r"#[a-zA-Z0-9\\n@_\\s]+", "", s2)
return s1
```

In[9]:

```
def remove_emoji(txt):
    emoji = re.compile("[
        u\"U0001F600-\\U0001F64F\" # emoticons
        u\"U0001F300-\\U0001F5FF\" # symbols & pictographs
        u\"U0001F680-\\U0001F6FF\" # transport & map symbols
        u\"U0001F1E0-\\U0001F1FF\" # flags (iOS)
        u\"U00002500-\\U00002BEF\" # chinese char
        u\"U00002702-\\U000027B0\"
        u\"U00002702-\\U000027B0\"
        u\"U000024C2-\\U0001F251\"
        u\"U0001f926-\\U0001f937\"
        u\"U00010000-\\U0010ffff\"
        u\"u2640-\\u2642\"
        u\"u2600-\\u2B55\"
        u\"u200d\"
        u\"u23cf\"
        u\"u23e9\"
        u\"u231a\"
        u\"ufe0f\" # dingbats
        u\"u3030\"
        ]+\", re.UNICODE)
    return re.sub(emoji, \"\", txt)
```

In[10]:

```
custom_stopwords = ['i', 'me', 'my', 'myself', 'we', 'our', 'ours', 'ourselves', 'you', "you're", "you've", "you'll", "you'd",
'your', 'yours', 'yourself', 'yourselves', 'he', 'him', 'his', 'himself', 'she', "she's", 'her', 'hers', 'herself', 'it', "it's", 'its',
'itself', 'they', 'them', 'their', 'theirs', 'themselves', 'what', 'which', 'who', 'whom', 'this', 'that', "that'll", 'these', 'those',
'am', 'is', 'are', 'was', 'were', 'be', 'been', 'being', 'have', 'has', 'had', 'having', 'do', 'does', 'did', 'doing', 'a', 'an', 'the',
'and', 'but', 'if', 'or', 'because', 'as', 'until', 'while', 'of', 'at', 'by', 'for', 'with', 'about', 'against', 'between', 'into',
'through', 'during', 'before', 'after', 'above', 'below', 'to', 'from', 'up', 'down', 'in', 'out', 'on', 'off', 'over', 'under', 'again',
'further', 'then', 'once', 'here', 'there', 'when', 'where', 'why', 'how', 'all', 'any', 'both', 'each', 'few', 'more', 'most',
'other', 'some', 'such', 'no', 'nor', 'not', 'only', 'own', 'same', 'so', 'than', 'too', 'very', 's', 't', 'can', 'will', 'just', 'don',
"don't", 'should', "should've", 'now', 'd', 'll', 'm', 'o', 're', 've', 'y', 'ain', 'aren', "aren't", 'couldn', "couldn't", 'didn',
"didn't", 'doesn', "doesn't", 'hadn', "hadn't", 'hasn', "hasn't", 'haven', "haven't", 'isn', "isn't", 'ma', 'mightn', "mightn't",
'mustn', "mustn't", 'needn', "needn't", 'shan', "shan't", 'shouldn', "shouldn't", 'wasn', "wasn't", 'weren', "weren't",
'won', "won't", 'wouldn', "wouldn't"]
```

In[11]:

```
def TweetCleaning(tweet):
    link_removal=remove_usernames_links(tweet)
    emoji_removal=remove_emoji(link_removal)
    after_stopword_removal=' '.join(word for word in emoji_removal.split() if word not in custom_stopwords)
    return after_stopword_removal
```

```
# In[12]:
```

```
def calcPolarity(tweet):  
    return TextBlob(tweet).sentiment.polarity  
  
def calcSubjectivity(tweet):  
    return TextBlob(tweet).sentiment.subjectivity  
  
def segmentation(tweet):  
    if tweet > 0:  
        return 'positive'  
    elif tweet == 0 :  
        return 'neutral'  
    else:  
        return 'negative'
```

```
# In[13]:
```

```
df["CleanedTweet"]=df["Tweet"].apply(TweetCleaning)  
df["tPolarity"]=df["CleanedTweet"].apply(calcPolarity)  
df["tSubjectivity"]=df["CleanedTweet"].apply(calcSubjectivity)  
df["segmentation"]=df["tPolarity"].apply(segmentation)
```

```
# In[14]:
```

```
df.head(10)
```

```
# In[15]:
```

```
df.pivot_table(index=['segmentation'],aggfunc={'segmentation':'count'})
```

```
# In[16]:
```

```
""consolidated=' '.join(word for word in df ['CleanedTweet'])  
wordCloud=WordCloud(width=400,height=200,random_state=20,max_font_size=119).generate(consolidated)  
  
plt.imshow(wordCloud,interpolation='bilinear')  
plt.axis('off')  
plt.show()""
```

```
# In[17]:
```

```
import seaborn as sns  
sns.set_style('whitegrid')  
sns.scatterplot(data=df,x='tPolarity',y='tSubjectivity',s=100,hue='segmentation')
```

```
# In[18]:
```

```
sns.countplot(data=df,x='segmentation')
```

```
# In[19]:
```

```
df.pivot_table(index=['segmentation'],aggfunc={'segmentation':'count'})
```

```
# In[20]:
```

```
def predict_sentiment(text):
    cleaned_text = TweetCleaning(text)
    polarity = calcPolarity(cleaned_text)

    if polarity > 0:
        return 'positive'
    elif polarity == 0:
        return 'neutral'
    else:
        return 'negative'

# User input for text
user_text = input("Enter the text for sentiment prediction: ")

# Predict sentiment for user input
predicted_sentiment = predict_sentiment(user_text)
print(f"The predicted sentiment for the input text is: {predicted_sentiment}")
```

```
# In[21]:
```

```
# Assuming you have a list of texts with known sentiments
```

```
test_data = [
    ("I am feeling great today.", "positive"),
    ("This is a terrible situation.", "negative"),
    ("The weather is okay.", "neutral"),
    # More test data...
]
```

```
def evaluate_sentiment(predictions, true_labels):
    correct = 0
    total = len(predictions)

    for pred, true_label in zip(predictions, true_labels):
        if pred == true_label:
            correct += 1

    accuracy = (correct / total) * 100
    return accuracy
```

```
predicted_sentiments = [predict_sentiment(text) for text, _ in test_data]
```

```
true_sentiments = [label for _, label in test_data]
```

```
accuracy = evaluate_sentiment(predicted_sentiments, true_sentiments)  
print(f"Accuracy: {accuracy:.2f}%")
```

```
# In[44]:
```

```
df1 = pd.read_csv("/Users/dhanarahulsainadiminti/Downloads/sent_ana_dataset/Rahul Gandhi_data.csv")
```

```
# In[45]:
```

```
df1
```

```
# In[46]:
```

```
df1["CleanedTweet"]=df1["Tweet"].apply(TweetCleaning)  
df1["tPolarity"]=df1["CleanedTweet"].apply(calcPolarity)  
df1["tSubjectivity"]=df1["CleanedTweet"].apply(calcSubjectivity)  
df1["segmentation"]=df1["tPolarity"].apply(segmentation)
```

```
# In[47]:
```

```
df1
```

```
# In[48]:
```

```
unwanted = ['Date','User','Tweet','Time','tPolarity','tSubjectivity']  
testing_data = df1.drop(unwanted,axis = 1)
```

```
# In[49]:
```

```
testing_data1 = testing_data.head(10)
```

```
# In[50]:
```

```
testing_data
```

```
# In[51]:
```

```
# Load your test dataset file  
test_df = testing_data1 # Replace with your file path
```

```

# Assuming your CSV file has columns named 'CleanedTweet' for speech and 'segmentation' for sentiment
test_data = list(test_df[['CleanedTweet', 'segmentation']].itertuples(index=False, name=None))

# Function to predict sentiment using TextBlob
def predict_sentiment(text):
    polarity = TextBlob(text).sentiment.polarity

    if polarity > 0:
        return 'positive'
    elif polarity == 0:
        return 'neutral'
    else:
        return 'negative'

# Use the test_data to predict sentiments
predicted_sentiments = [predict_sentiment(CleanedTweet) for CleanedTweet, _ in test_data]
true_sentiments = [segmentation for CleanedTweet, segmentation in test_data]

# Evaluate accuracy
def evaluate_sentiment(predictions, true_labels):
    correct = sum(pred == true_label for pred, true_label in zip(predictions, true_labels))
    total = len(predictions)
    accuracy = (correct / total) * 100
    return accuracy

accuracy = evaluate_sentiment(predicted_sentiments, true_sentiments)
print(f"Accuracy: {accuracy:.2f}%")

```

Flask Code:

```

from flask import Flask, render_template, request
from textblob import TextBlob

app = Flask(__name__)

def predict_sentiment(text):
    analysis = TextBlob(text)
    # Use TextBlob's polarity to predict sentiment
    if analysis.sentiment.polarity > 0:
        return 'Positive'
    elif analysis.sentiment.polarity == 0:
        return 'Neutral'
    else:
        return 'Negative'

@app.route('/', methods=['GET', 'POST'])
def index():
    if request.method == 'POST':
        text = request.form['textInput']
        sentiment = predict_sentiment(text)
        return render_template('index.html', sentiment=sentiment)
    return render_template('index.html')

if __name__ == "__main__":
    app.run(debug=True)

```

HTML:

```
<!doctype html>
<html lang="en">

<head>
  <!-- Required meta tags -->
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">

  <!-- Bootstrap CSS -->
  <link
href="https://cdn.jsdelivrivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
rel="stylesheet"

integrity="sha384-1BmE4kWBq78iYhFldvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqyl2QvZ6jIW3"
crossorigin="anonymous">

<title>DataScience Project</title>
<style>
  body {
    background-color: black;
  }

  #resize {
    width: 200px;
    height: 380px;
    height: 760px;
  }

  .write {
    font-size: 20px;
    padding: 20px;
    border: 2px solid grey;
    background-color: grey;
    opacity: 50%;
  }

  #img1 {
    margin-top: 50px;
    float: right;
    width: 500px;
    height: 300px;
  }
```



```

.txt {
    color: aliceblue;
    margin-top: 50px;
}

#Summarize {
    color: grey;
    font-size: 40px;
}

#result {
    color: white;
}
</style>
</head>

<body>
<nav class="navbar navbar-expand-lg navbar-dark bg-dark">
    <div class="container-fluid">
        <a class="navbar-brand" href="#">Summarizer</a>
        <button class="navbar-toggler" type="button" data-bs-toggle="collapse"
data-bs-target="#navbarSupportedContent"
        aria-controls="navbarSupportedContent" aria-expanded="false"
aria-label="Toggle navigation">
            <span class="navbar-toggler-icon"></span>
        </button>
        <div class="collapse navbar-collapse" id="navbarSupportedContent">
            <ul class="navbar-nav me-auto mb-2 mb-lg-0">
                <li class="nav-item">
                    <a class="nav-link active" aria-current="page" href="#">Home</a>
                </li>
                <li class="nav-item">
                    <a class="nav-link active" aria-current="page" href="about.html">About
Us</a>
                </li>
                <!-- <li class="nav-item">
                    <a class="nav-link active" aria-current="page"
href="contact.html">Contact Us</a>
                </li> -->
            </ul>
            <form class="d-flex">
                <button class="btn btn-outline-light" type="submit">Analyze</button>
            </form>
        </div>
    </div>
</nav>

```

```

</nav>

<div id="carouselExampleCaptions" class="carousel slide" data-bs-ride="carousel">
  <div class="carousel-indicators">
    <button type="button" data-bs-target="#carouselExampleCaptions"
data-bs-slide-to="0" class="active"
    aria-current="true" aria-label="Slide 1"></button>
    <button type="button" data-bs-target="#carouselExampleCaptions"
data-bs-slide-to="1"
    aria-label="Slide 2"></button>
    <button type="button" data-bs-target="#carouselExampleCaptions"
data-bs-slide-to="2"
    aria-label="Slide 3"></button>
  </div>
  <div class="carousel-inner">
    <div class="carousel-item active">
      
      <div class="carousel-caption d-none d-md-block">
        <h5>Sentiment Analysis</h5>
        <p>AI Powered Sentiment in Politics</p>
      </div>
    </div>
    <div class="carousel-item">
      
      <div class="carousel-caption d-none d-md-block">
        <h5>Sentiment Analysis</h5>
        <p>AI Powered Sentiment in Politics</p>
      </div>
    </div>
    <div class="carousel-item">
      
      <div class="carousel-caption d-none d-md-block">
        <h5>Sentiment Analysis</h5>
        <p>AI Powered Sentiment in Politics</p>
      </div>
    </div>
  </div>
  <button class="carousel-control-prev" type="button"
data-bs-target="#carouselExampleCaptions" data-bs-slide="prev">
    <span class="carousel-control-prev-icon" aria-hidden="true"></span>
    <span class="visually-hidden">Previous</span>
  </button>

```

```

<button class="carousel-control-next" type="button"
data-bs-target="#carouselExampleCaptions" data-bs-slide="next">
    <span class="carousel-control-next-icon" aria-hidden="true"></span>
    <span class="visually-hidden">Next</span>
</button>
</div>

<!-- 

<center class="write" style="color:rgb(255, 255, 255);">About Project</center>
<!-- 

<div class="txt">
    <p>Unveiling Sentiments in Political Speeches" explores the intricate emotions
and underlying intentions woven into
    the fabric of political rhetoric. This study delves into the art of
persuasion, decoding the subtle cues, tones,
    and word choices employed by speakers to sway public opinion. By analyzing
speeches through a socio-emotional
    lens, this research sheds light on how leaders manipulate sentiment to advance
their agendas, fostering a deeper
    understanding of the complex interplay between language, emotion, and
politics.</p>
</div>

<div id="Summarize">
    <center>Interested ? <br> Let's Analyze</center>
</div>

<center class="container">
    <form method="POST">

        <textarea id="textInput" name = "textInput" placeholder="Enter text here..."
rows="4" cols="50"></textarea><br>
        <button class="btn btn-outline-light" type="submit"
onclick="analyzeSentiment()">Analyze</button>
        <div id="result"></div>
        {% if sentiment %}
        <h2 id="result">Sentiment: {{ sentiment }}</h2>
        {% endif %}
    </form>
</center>

<!-- Optional JavaScript; choose one of the two! -->

```

```

<!-- Option 1: Bootstrap Bundle with Popper -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"

integrity="sha384-ka7Sk0Gln4gmtz2MlQnikTlwxGysOg+OMhuP+IlRH9sENBO0LRn5q+8nbTov4+lp"
crossorigin="anonymous"></script>

<!-- Option 2: Separate Popper and Bootstrap JS -->
<!--
<script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.10.2/dist/umd/popper.min.js"
integrity="sha384-7+zCNj/IqJ95wo16oMtfsKbZ9ccEh3leOz1HGyDuCQ6wgnyJNSYdrPa03rtR1zdB"
crossorigin="anonymous"></script>
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.min.js"
integrity="sha384-QJHtvGhmr9XOIpI6YVutG+2QOK9T+ZnN4kzFN1RtK3zEFEIsxhlmWl5/YESvpZ13"
crossorigin="anonymous"></script>
-->
</body>

</html>

```

Github link:

<https://github.com/smartinternz02/SI-GuidedProject-612159-1699512337>

Demo Link :

<https://drive.google.com/file/d/1Tfh0lpuobVUobjMxdZ-OcyXhq5obSvQA/view?usp=sharing>

