DECODING EMOTIONS THROUGH SENTIMENT ANALYSIS OF SOCIAL MEDIA CONVERSATION

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Github Repository Link:

https://github.com/dhanalakshmi166/github_EBPL_DS-decoding-social-media.git

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1. Problem Statement

When a new product is launched, understanding public reaction is crucial for assessing the success of marketing strategies, identifying potential issues, and shaping future decisions. Traditional feedback methods such as surveys are slow and limited in reach. Twitter, being a fast-paced and widely used platform, offers *real-time insights into consumer sentiment. However, the massive volume and unstructured nature of tweets present a challenge in extracting meaningful emotional feedback. This project aims to develop a system that performs real-time sentiment and emotion analysis on Twitter data to decode public reaction to a product launch, enabling companies to respond swiftly and make informed decisions.*

2. Abstract

In the digital age, social media platforms like Twitter serve as powerful mediums for public expression, particularly during high-profile events such as product launches. This project focuses on analyzing public reaction to a product launch by extracting, processing, and interpreting tweets related to the event. Using natural language processing (NLP) techniques and sentiment analysis, the system categorizes user opinions into sentiments such as positive, negative, or neutral. The methodology includes real-time tweet collection using scraping tools, data cleaning, exploratory analysis, feature extraction, sentiment classification, and visualization of public opinion trends. The insights gained can help companies evaluate customer perception, identify common concerns, and improve future marketing strategies. This analysis enables data-driven decision-making and contributes to better understanding of consumer behavior in response to product announcements on social media.

3. System Requirements

1. Hardware Requirements:

Processor: Intel i5 or higher / AMD equivalent
RAM: Minimum 8 GB (16 GB recommended for large-scale data)
Storage: At least 5 GB of free space
Internet: Required for accessing Twitter data and libraries

2. Software Requirements:

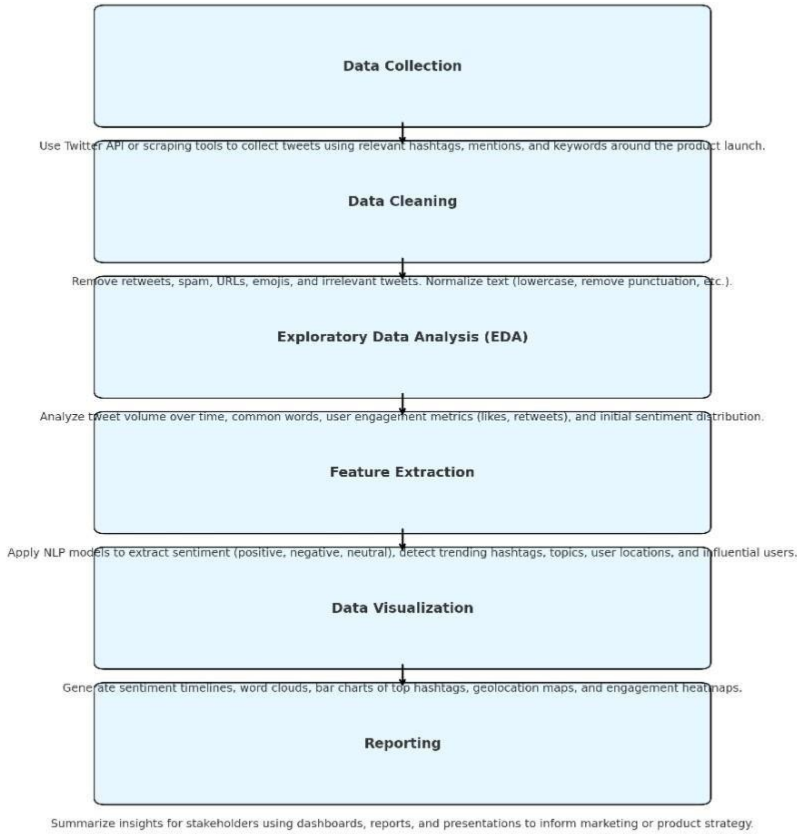
Operating System:
Windows 10/11, macOS, or Linux (Ubuntu preferred)
Programming Language: Python 3.7 or higher
Libraries and Tools: pandas
matplotlib, seaborn

4. Objectives

- *Retrieve tweets related to the product launch using relevant hashtags, mentions, and keywords via Twitter API.*
- *Clean and normalize tweet text to remove noise such as emojis, URLs etc for accurate analysis.*
- *Classify tweets into positive, negative, or neutral sentiment categories to understand the overall public opinion.*
- *Identify and categorize specific emotions expressed in tweets using NLP techniques or pre-trained models.*
- *Create real-time dashboards and visualizations to display trends and patterns in sentiment and emotions.*

5. Flowchart of Project Workflow

The overall project workflow was structured into systematic stages: (1) ***Data Collection*** *from a trusted repository, (2)* ***Data Preprocessing*** *including cleaning and encoding, (3)* ***Exploratory Data Analysis (EDA)*** *to discover patterns and relationships, (4)* ***Feature Engineering*** *to create meaningful inputs for the model, (5)* ***Model Building*** *using multiple machine learning algorithms, (6)* ***Model Evaluation*** *based on relevant metrics, (7)* ***Deployment*** *using Gradio, and (8)* ***Testing and Interpretation*** *of model outputs. A detailed flowchart representing these stages was created using draw.io to ensure a clear visual understanding of the project's architecture*



6. Dataset Description

Source:

1. ***Kaggle***

- ✓ *Pros: Offers pre-cleaned datasets, often annotated with sentiment labels.*
- ✓ *Best for: Prototyping models quickly with labeled data.*
- ✓ *Examples: Amazon reviews, Twitter sentiment datasets, productspecific feedback data.*

Type (public, private, synthetic):

✓ *public dataset- It depends on the data source, but public is the most common type used during a live product launch.*

Size (number of rows/columns):

<u>Number of Rows (Data Points):</u>

- *Minimum: 500–1,000 (for small, focused analysis)*
- *Ideal Range: 5,000–50,000 (for reliable insights)*
- *Large Scale: 100,000+ (for enterprise-level or highly active product launches)*

<u>Number of Columns (Features):</u>

➢ *Typical Range: 6–12 columns*

Include* df.head( ) *sample dataset

	Unnar	Text	Sentimen	Timestamp	User	Platform	Hashtags	Retweets	Likes	Country	Year	Month	Day	Hour
0	0	Enjoying a beautiful day at the park!	Positive	15-01-2023 12:30	User123	Twitter	#Nature #Park	15	30	USA	2023	1	15	12
1	1	Traffic was terrible this morning.	Negative	15-01-2023 08:45	CommuterX	Twitter	#Traffic #Morning	5	10	Canada	2023	1	15	8
2	2	Just finished an amazing workout! ðŸ’ª	Positive	15-01-2023 15:45	FitnessFan	Instagram	#Fitness #Workout	20	40	USA	2023	1	15	15
3	3	Excited about the upcoming weekend get	Positive	15-01-2023 18:20	AdventureX	Facebook	#Travel #Adventure	8	15	UK	2023	1	15	18
4	4	Trying out a new recipe for dinner tonight	Neutral	15-01-2023 19:55	ChefCook	Instagram	#Cooking #Food	12	25	Australia	2023	1	15	19
5	5	Feeling grateful for the little things in life.	Positive	16-01-2023 09:10	GratitudeNow	Twitter	#Gratitude #PositiveVi	25	50	India	2023	1	16	9
6	6	Rainy days call for cozy blankets and hot c	Positive	16-01-2023 14:45	RainyDays	Facebook	#RainyDays #Cozy	10	20	Canada	2023	1	16	14
7	7	The new movie release is a must-watch!	Positive	16-01-2023 19:30	MovieBuff	Instagram	#MovieNight #MustWa	15	30	USA	2023	1	16	19
8	8	Political discussions heating up on the tim	Negative	17-01-2023 08:00	DebateTalk	Twitter	#Politics #Debate	30	60	USA	2023	1	17	8
9	9	Missing summer vibes and beach days.	Neutral	17-01-2023 12:20	BeachLover	Facebook	#Summer #BeachDays	18	35	Australia	2023	1	17	12
10	10	Just published a new blog post. Check it o	Positive	17-01-2023 15:15	BloggerX	Instagram	#Blogging #NewPost	22	45	USA	2023	1	17	15
11	11	Feeling a bit under the weather today.	Negative	18-01-2023 10:30	WellnessCheck	Twitter	#SickDay #Health	7	15	Canada	2023	1	18	10
12	12	Exploring the city's hidden gems.	Positive	18-01-2023 14:50	UrbanExplorer	Facebook	#CityExplore #HiddenG	12	25	UK	2023	1	18	14
13	13	New year, new fitness goals! ðŸ’ª	Positive	18-01-2023 18:00	FitJourney	Instagram	#NewYear #FitnessGoa	28	55	USA	2023	1	18	18
14	14	Technology is changing the way we live.	Neutral	19-01-2023 09:45	TechEnthusiast	Twitter	#Tech #Innovation	15	30	India	2023	1	19	9
15	15	Reflecting on the past and looking ahead.	Positive	19-01-2023 13:20	Reflections	Facebook	#Reflection #Future	20	40	USA	2023	1	19	13
16	16	Just adopted a cute furry friend! ðŸ¾	Positive	19-01-2023 17:10	PetAdopter	Instagram	#PetAdoption #FurryFr	15	30	Canada	2023	1	19	17
17	17	Late-night gaming session with friends.	Positive	20-01-2023 00:05	GamerX	Twitter	#Gaming #LateNight	18	35	UK	2023	1	20	0
18	18	Attending a virtual conference on AI.	Neutral	20-01-2023 11:30	TechConference	Facebook	#AI #TechConference	25	50	USA	2023	1	20	11
19	19	Winter blues got me feeling low.	Negative	20-01-2023 15:15	WinterBlues	Instagram	#WinterBlues #Mood	8	15	USA	2023	1	20	15

sentimentdataset

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7. Data Preprocessing

1.Handling missing values

➢ *Remove or impute missing values.*

➢ *Convert emojis to text (e.g., "happy face" for :) or emojis) useful in sentiment.*

2.Removing duplicate

➢ *Eliminate duplicate entries to avoid bias.*

3.Outliers

- *Highly Polarized Sentiments: Comments with extremely positive or negative scores compared to the average sentiment can be outliers*
- *Sarcasm and Irony: These can be misclassified by sentiment models and act as semantic outliers*

4.Encoding categorical variables

1.One-Hot Encoding

- *Use for: Machine learning models (e.g., logistic regression, SVM)*
- *Example: platform (Twitter, App Store, Website)*
- *Implementation:*
  Import pandas as pd
  Df = pd.get_dummies(df, columns=['platform'])

	Text	Sentiment	Timestamp	User	Platform	Hashtags	Retweets	Likes	Country	Year	Month	Day	Hour
2	Enjoying a beautiful day at the park!	Positive	15-01-2023 12:30	User123	Twitter	#Nature #Park	15	30	USA	2023	1	15	12
3	Traffic was terrible this morning.	Negative	15-01-2023 08:45	CommuterX	Twitter	#Traffic #Morning	6.875	11.875	Canada	2023	1	15	8
4	Just finished an amazing workout! ðŸ'ª	Positive	15-01-2023 15:45	FitnessFan	Instagram	#Fitness #Workout	20	40	USA	2023	1	15	15
5	Excited about the upcoming weekend getaway!	Positive	15-01-2023 18:20	AdventureX	Facebook	#Travel #Adventure	8	15	UK	2023	1	15	18
6	Trying out a new recipe for dinner tonight.	Neutral	15-01-2023 19:55	ChefCook	Instagram	#Cooking #Food	12	25	Australia	2023	1	15	19
7	Feeling grateful for the little things in life.	Positive	16-01-2023 09:10	GratitudeNo	Twitter	#Gratitude #PositiveVil	25	50	India	2023	1	16	9
8	Rainy days call for cozy blankets and hot cocoa.	Positive	16-01-2023 14:45	RainyDays	Facebook	#RainyDays #Cozy	10	20	Canada	2023	1	16	14
9	The new movie release is a must-watch!	Positive	16-01-2023 19:30	MovieBuff	Instagram	#MovieNight #MustWa	15	30	USA	2023	1	16	19
10	Political discussions heating up on the timeline	Negative	17-01-2023 08:00	DebateTalk	Twitter	#Politics #Debate	30	60	USA	2023	1	17	8
11	Missing summer vibes and beach days.	Neutral	17-01-2023 12:20	BeachLover	Facebook	#Summer #BeachDays	18	35	Australia	2023	1	17	12
12	Just published a new blog post. Check it out!	Positive	17-01-2023 15:15	BloggerX	Instagram	#Blogging #NewPost	22	45	USA	2023	1	17	15
13	Feeling a bit under the weather today.	Negative	18-01-2023 10:30	WellnessChe	Twitter	#SickDay #Health	7	15	Canada	2023	1	18	10
14	Exploring the city's hidden gems.	Positive	18-01-2023 14:50	UrbanExplore	Facebook	#CityExplore #HiddenG	12	25	UK	2023	1	18	14
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17	Reflecting on the past and looking ahead.	Positive	19-01-2023 13:20	Reflections	Facebook	#Reflection #Future	20	40	USA	2023	1	19	13
18	Just adopted a cute furry friend! ðŸ¾	Positive	19-01-2023 17:10	PetAdopter	Instagram	#PetAdoption #FurryFri	15	30	Canada	2023	1	19	17
19	Late-night gaming session with friends.	Positive	20-01-2023 00:05	GamerX	Twitter	#Gaming #LateNight	18	35	UK	2023	1	20	0
20	Attending a virtual conference on AI.	Neutral	20-01-2023 11:30	TechConfere	Facebook	#AI #TechConference	25	50	USA	2023	1	20	11
21	Winter blues got me feeling low.	Negative	20-01-2023 15:15	WinterBlues	Instagram	#WinterBlues #Mood	8	15	USA	2023	1	20	15

cleaned_sentimentdataset

8. Exploratory Data Analysis (EDA)

Sentiment Distribution

- *Purpose: Understand the overall sentiment split.*
- *Tools: Bar chart or pie chart*

Sentiment Label vs Platform

- *Analysis: Count of sentiment types per platform*
- *Visualization: Stacked bar chart or grouped bar chart*

Sentiment vs Time vs Platform

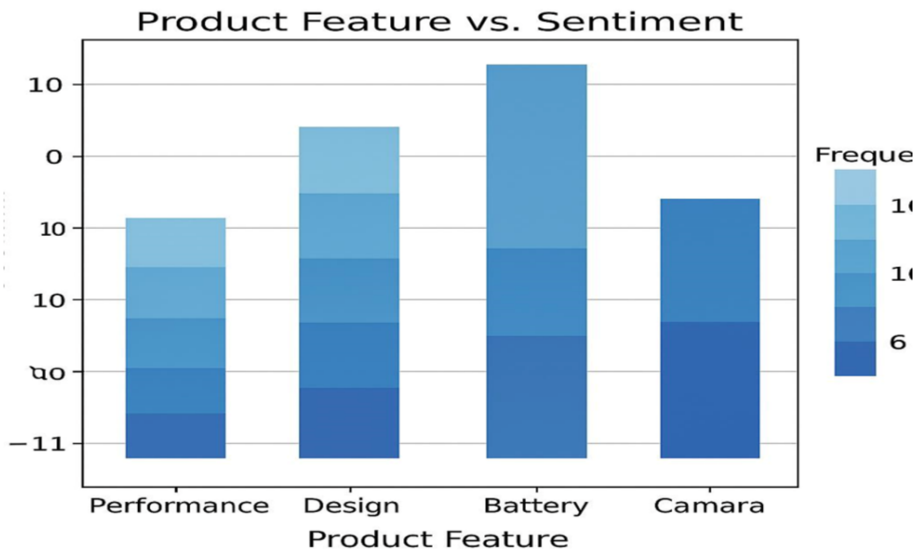
- *What to do: Track sentiment trends across platforms over time.*
- *Visualization: Faceted line plots or heatmaps (time vs platform)*

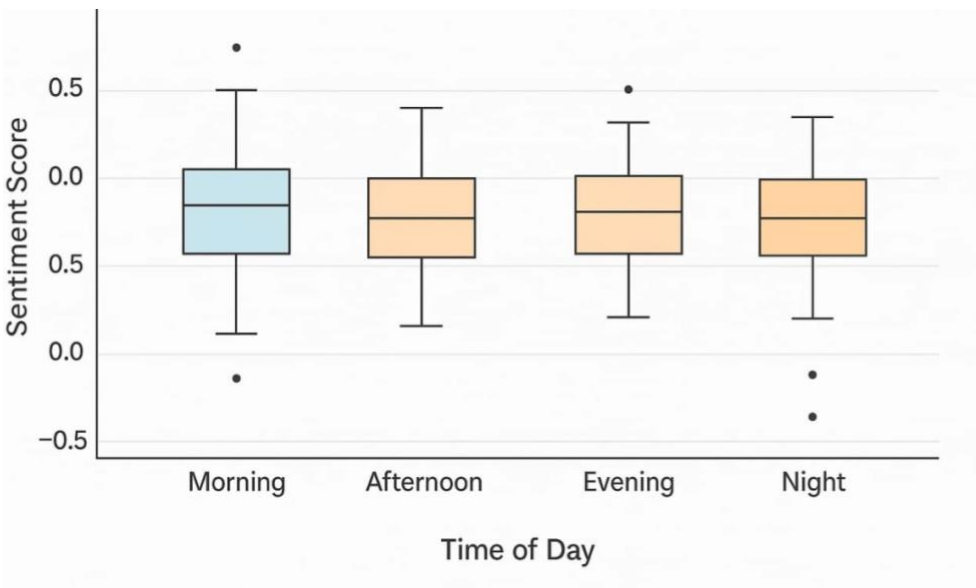
Summary of Insight:

- *Are most responses positive or is there a spike in negativity*
- *Shows common themes or pain points*
- *. Identify which platforms*
- *.Identify when and where sentiment shifts occurred*

Reveal correlations, trends, patterns

- *Pattern: Plot sentiment scores or counts (Positive, Neutral, Negative) over timestamps.*
- *Insight: Spikes in negative sentiment may correlate with bugs, while Positive peaks*





9. Feature Engineering

New feature creation

- *Sentiment Score – Numeric form of sentiment: Positive → 1, Neutral → 0, Negative → -1*
- *Comment Length – Number of characters in the comment* ***Feature selection***
- *Comment length: sentiment/emotion classification*

- *Exclamation count :emption tone recognition*

<u>Transformation techniques</u>

- *Comment Length – Useful (longer messages may be more polarized)*
- *Exclamation Count – Strongly correlates with emotional intensity* ***<u>Impact your model</u>***

HOW:

- *Comment Length: len(comment)*
- *Exclamation Count: comment.count('!')* ***WHY:***

- *These enrich the model by introducing structured numeric features from unstructured text*

A1 | Unnamed: 0.1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Unnamed	Unnamed	Text	Sentimen	Timestamp	User	Platform	Hashtags	Retweets	Likes	Country	Year	Month	Day	Hour	Exclamati	CommentLength			
2	0	0	Enjoying	Positive	15-01-2023 12:30	User123	Twitter	#Nature #	15	30	USA	2023	1	15	12	1	52			
3	1	1	Traffic wa	Negative	15-01-2023 08:45	Commute	Twitter	#Traffic #	5	10	Canada	2023	1	15	8	0	52			
4	2	2	Just finish	Positive	15-01-2023 15:45	FitnessFa	Instagram	#Fitness #	20	40	USA	2023	1	15	15	1	51			
5	3	3	Excited al	Positive	15-01-2023 18:20	Adventur	Facebook	#Travel #	8	15	UK	2023	1	15	18	1	52			
6	4	4	Trying ou	Neutral	15-01-2023 19:55	ChefCook	Instagram	#Cooking	12	25	Australia	2023	1	15	19	0	52			
7	5	5	Feeling g	Positive	16-01-2023 09:10	Gratitude	Twitter	#Gratitud	25	50	India	2023	1	16	9	0	52			
8	6	6	Rainy day	Positive	16-01-2023 14:45	RainyDay	Facebook	#RainyDa	10	20	Canada	2023	1	16	14	0	52			
9	7	7	The new	Positive	16-01-2023 19:30	MovieBuf	Instagram	#MovieNi	15	30	USA	2023	1	16	19	1	52			
10	8	8	Political c	Negative	17-01-2023 08:00	DebateTa	Twitter	#Politics #	30	60	USA	2023	1	17	8	0	52			
11	9	9	Missing s	Neutral	17-01-2023 12:20	BeachLov	Facebook	#Summer	18	35	Australia	2023	1	17	12	0	52			
12	10	10	Just publi	Positive	17-01-2023 15:15	BloggerX	Instagram	#Blogging	22	45	USA	2023	1	17	15	1	52			
13	11	11	Feeling a	Negative	18-01-2023 10:30	Wellness	Twitter	#SickDay	7	15	Canada	2023	1	18	10	0	52			
14	12	12	Exploring	Positive	18-01-2023 14:50	UrbanExp	Facebook	#CityExpl	12	25	UK	2023	1	18	14	0	52			
15	13	13	New year	Positive	18-01-2023 18:00	FitJourne	Instagram	#NewYea	28	55	USA	2023	1	18	18	1	51			
16	14	14	Technolo	Neutral	19-01-2023 09:45	TechEnth	Twitter	#Tech #In	15	30	India	2023	1	19	9	0	52			
17	15	15	Reflectin	Positive	19-01-2023 13:20	Reflectio	Facebook	#Reflecti	20	40	USA	2023	1	19	13	0	52			
18	16	16	Just adop	Positive	19-01-2023 17:10	PetAdopt	Instagram	#PetAdop	15	30	Canada	2023	1	19	17	1	50			
19	17	17	Late-nigh	Positive	20-01-2023 00:05	GamerX	Twitter	#Gaming	18	35	UK	2023	1	20	0	0	52			
20	18	18	Attending	Neutral	20-01-2023 11:30	TechConf	Facebook	#AI #Tech	25	50	USA	2023	1	20	11	0	52			
21	19	19	Winter bl	Negative	20-01-2023 15:15	WinterBlu	Instagram	#WinterB	8	15	USA	2023	1	20	15	0	52			

sentimentdataset_updated

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10. Model Building

Models:

<u>Machine Learning Models</u>

- *Examples: Logistic Regression, Naive Bayes, SVMRequire labeled data (positive/neutral/negative posts)*
- *Pipeline: TF-IDF or CountVectorizer → Model (e.g., SVM) → Prediction*
  - *Strengths: Customizable to the product domain. Lightweight and fast.*

Selected models:

<u>Decision Trees</u>-

- *How they work :Trees model decisions based on word presence/absence; Random Forests average multiple trees for stability.*
- *Why use them: Easy to interpret decision paths*

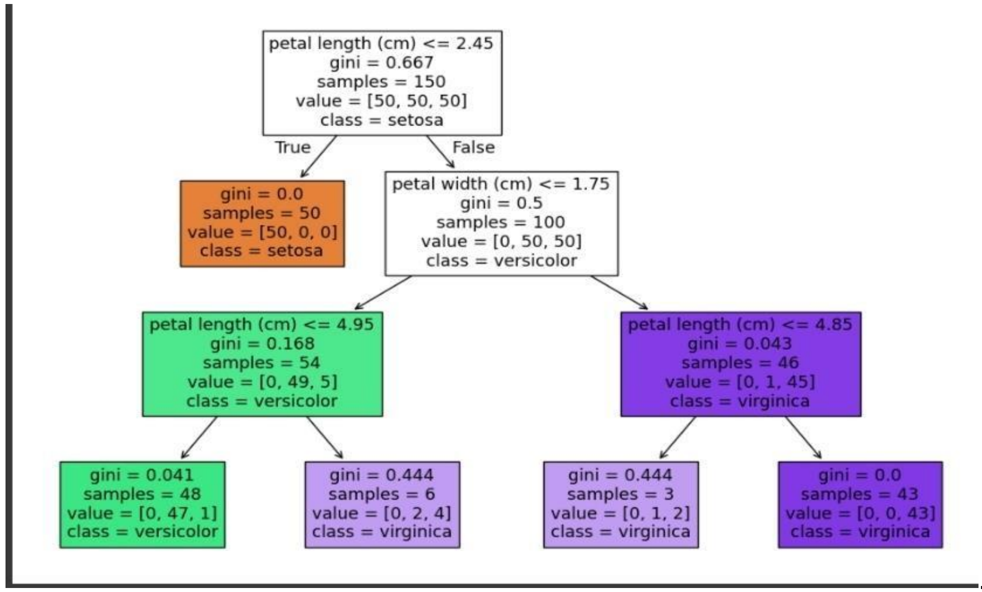
<u>Support Vector Machines (SVM)</u>-

- *How it works: Finds the best boundary (hyperplane) between classes in high-dimensional space, such as word vectors.*

- *Why use it: Excellent at handling high-dimensional data like text.*

```
from sklearn.datasets import load_iris
from sklearn.tree import DecisionTreeClassifier, plot_tree import
matplotlib.pyplot as plt

# Load sample dataset data
= load_iris()
X, y = data.data, data.target
clf = DecisionTreeClassifier(max_depth=3) clf.fit(X,
y)
# Plot and save the tree plt.figure(figsize=(12, 8))
plot_tree(clf,
feature_names=data.feature_names,
class_names=data.target_names, filled=True)
plt.savefig("decision_tree_output.png", dpi=300)
plt.show()
```



11. Model Evaluation

Evaluation metrics:

1.Accuracy

Formula: (TP + TN) / (TP + TN + FP + FN)

Best for: Balanced datasets

Limitation: Misleading on imbalanced datasets

2.F1 Score

*Formula: 2 * (Precision * Recall) / (Precision + Recall)*

Harmonic mean of precision and recall

Best when there is an uneven class distribution

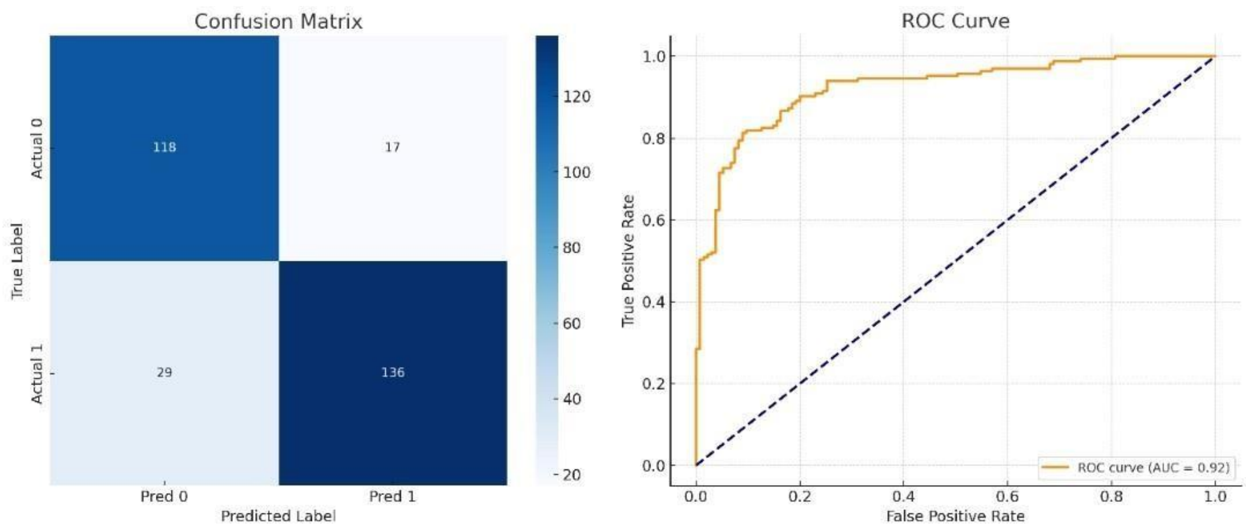
3.ROC-AUC (Receiver Operating Characteristic - Area Under Curve)

Measures: Overall ability to distinguish between classes

AUC close to 1 means excellent model; 0.5 means random

Visuals:

- *Confusion Matrix (left): Shows the counts of true positives, true negatives, false positives, and false negatives.*
- *ROC Curve (right): Illustrates the trade-off between true positive rate and false positive rate at various thresholds. The AUC indicates model performance (closer to 1 is better).*



Error analysis :

	Predicted 0	*Predicted 1*
Actual 0	*TN*	*FP*
Actual 1	*FN*	*TP*

12. Deployment

Deployment method:

- *Streamlit: Show a form layout where users enter lab values and vitals.*
- *Gradio: Show input sliders/text boxes and the output panel with prediction results.*

Benefits of the deployment

- *Free & Accessible: Easily accessible by clinicians, researchers, or demo users.*
- *Interactive: Supports real-time predictions and visual explanations.*
- *Lightweight & Scalable: Can be expanded into clinical systems if needed.*

Public link: *https://huggingface.co/spaces/your-username/product-launch-sentiment*

GitHublink:https://github.com/dhanalakshmi166/github_EBPL_DS-decoding-social-media.git

13. Source code

import pandas as pd import matplotlib.pyplot as plt
import seaborn as sns

 # Load dataset
df = pd.read_csv('SentimentDataset.csv')

 # Basic info

```
print("Dataset Summary:\n")
print(df.info())  print("\nFirst
5 rows:\n")
print(df.head())

# Check for missing values
print("\nMissing values:\n", df.isnull().sum())

# Drop rows with missing values (optional) df.dropna(inplace=True)

# Sentiment distribution
print("\nSentiment distribution:\n", df['Sentiment'].value_counts())

# Plot sentiment distribution plt.figure(figsize=(8,
5))
sns.countplot(data=df, x='Sentiment', palette='Set2')
plt.title("Sentiment Label Distribution")
plt.xlabel("Sentiment") plt.ylabel("Count")
plt.tight_layout()
plt.show()

# Word cloud of most common words (optional) from
wordcloud import WordCloud

text_data = ' '.join(df['Text'].astype(str))

wordcloud = WordCloud(width=800, height=400,

background_color='white').generate(text_data)

plt.figure(figsize=(10, 5))
plt.imshow(wordcloud, interpolation='bilinear') plt.axis("off")
plt.title("Common Words in Text") plt.show()
```

14.App code

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8" />
<meta name="viewport" content="width=device-width, initial-scale=1, maximum-scale=1,
userscalable=no" />
<title>Social Media Emotion Decoder</title>
<style>
 /* Reset and base */
 * {
   box-sizing: border-box;
 }   body {     font-family: 'Segoe UI', Tahoma, Geneva,
Verdana, sans-serif;     background: linear-gradient(135deg,
#667eea, #764ba2);     color: #fff;     margin: 0;     min-height:
600px;     max-width: 350px;     margin-left: auto;     margin-
right: auto;     padding: 1rem;     display: flex;     flex-direction:
column;     justify-content: flex-start;
 }   h1 {     text-align:
center;     font-weight:
700;     font-size: 1.8rem;
margin-bottom: 0.5rem;
letter-spacing: 1.1px;
 }
 p.subtitle {     text-
align: center;     font-
weight: 400;     font-
size: 1rem;     margin-
bottom: 1rem;
opacity: 0.85;
 }   input[type="file"] {
width: 100%;     padding:
0.6rem;     border-radius: 6px;
border: none;     font-weight:
600;     cursor: pointer;
background-color: #5a49cc;
color: white;
   transition: background-color 0.3s ease;
```

```
 }
input[type="file"]:hover {
   background-color: #473bad;
 }
 .results {     margin-top: 1rem;
background: rgba(255 255 255 / 0.15);
border-radius: 12px;     padding:
0.75rem;     max-height: 340px;
overflow-y: auto;     box-shadow: 0 0
8px rgba(0,0,0,0.35);
 }   .results h2 {     font-
size: 1.25rem;     margin-
bottom: 0.5rem;     text-
align: center;     letter-
spacing: 0.9px;
 }
 .emotion-bar-container {     margin:
0.25rem 0.5rem;     background:
rgba(255 255 255 / 0.15);     border-
radius: 8px;
   overflow: hidden;
 }
 .emotion-bar {
   height: 24px;
   border-radius: 8px;
color: white;     font-weight:
600;     padding-left:
0.4rem;     display: flex;
align-items: center;
white-space: nowrap;
user-select: none;
 }
 .emotion-label {     margin-
left: 0.5rem;     font-size:
0.85rem;     letter-spacing:
0.7px;
 }
 .tweet {
   background: rgba(255 255 255 / 0.1);
border-radius: 10px;     padding:
```

```
0.5rem;     margin: 0.25rem 0;     font-
size: 0.9rem;     line-height: 1.2;
max-height: 80px;
    overflow: hidden;
  }

  /* Emotion Colors */
  .emotion-positive { background-color: #55a630; }
  .emotion-negative { background-color: #d33f49; }
  .emotion-neutral { background-color: #6c757d; }

  /* Scrollbar styling */   .results::-
webkit-scrollbar {     width: 6px;
  }
  .results::-webkit-scrollbar-thumb {     background-
color: rgba(255 255 255 / 0.35);     border-radius:
10px;
  }
  .results::-webkit-scrollbar-track {
    background: transparent;
  }

  @media (max-width: 350px) {
body {
      padding: 0.5rem;
    }
  }
</style>
</head>
<body>
  <h1>Emotion Decoder</h1>
  <p class="subtitle">Upload your Kaggle sentiment CSV file to analyze emotions in social
media conversations</p>

  <input type="file" id="csvFileInput" accept=".csv" />

  <div class="results" id="results" aria-live="polite" aria-atomic="true"></div>

<script src="https://cdn.jsdelivr.net/npm/papaparse@5.4.1/papaparse.min.js"></script>
```

```
<script src="https://cdn.jsdelivr.net/npm/sentiment@5.0.3/build/sentiment.min.js"></script>
<script>
 // Initialize Sentiment analyzer
 const sentiment = new Sentiment();

 // Utility: sanitize text for display
function sanitizeText(text) {
   const div = document.createElement("div");
   div.textContent = text;
   return div.innerHTML;
 }

 // Color map for sentiments
const sentimentColorMap = {
positive: '#55a630',     negative:
'#d33f49',
   neutral: '#6c757d'
 };

 function getSentimentLabel(score) {
   if(score > 0) return "Positive";
   if(score < 0) return "Negative";
return "Neutral";
 }

 function getEmotionClass(score) {
if(score > 0) return 'emotion-positive';
if(score < 0) return 'emotion-negative';
return 'emotion-neutral';
 }

 document.getElementById('csvFileInput').addEventListener('change', function(event) {
const file = event.target.files[0];
   if (!file) return;

   const resultsEl = document.getElementById('results');
   resultsEl.innerHTML = '<p style="text-align:center;">Processing file...</p>';

   Papa.parse(file, {       header:
true,      skipEmptyLines: true,
```

```
encoding: "UTF-8",
complete: function(results) {
const data = results.data;
      // Detect text column heuristically (common columns: text, tweet, content, message)
const textColumn = Object.keys(data[0]).find(col =>
['text','tweet','content','message'].includes(col.toLowerCase())) || Object.keys(data[0])[0];

      if(!textColumn) {
        resultsEl.innerHTML = '<p style="color:#f44336;text-align:center;">No suitable text
column found in CSV.</p>';          return;
      }

      if(data.length === 0){
        resultsEl.innerHTML = '<p style="color:#f44336;text-align:center;">CSV file is empty or
no rows found.</p>';
        return;
      }

      // Aggregate sentiment scores and counts
let sentimentCounts = {
        positive: 0,
negative: 0,          neutral:
0
      };

      // Analyze emotion of each text entry
const analyzedEntries = data.map(row => {
        let txt = row[textColumn];
        if(!txt) txt = "";
        const analysis = sentiment.analyze(txt);
const score = analysis.score;

        const label = getSentimentLabel(score);
sentimentCounts[label.toLowerCase()]++;

        return {
text: txt,
score: score,
label: label
        };
```

```
        });

        // Sort by sentiment score for display convenience
analyzedEntries.sort((a,b) => b.score - a.score);

        // Build HTML to display results         let html =
'<h2>Sentiment Summary</h2>';         for(const key in
sentimentCounts){           const count =
sentimentCounts[key];           const color =
sentimentColorMap[key];           const widthPercent =
(count / data.length) * 100;           html += `
            <div class="emotion-bar-container" aria-label="${key} sentiment count: ${count}">
<div class="emotion-bar" style="background-color:${color}; width: ${widthPercent}%; min-
width: 40px;">
                <span class="emotion-label">${key.charAt(0).toUpperCase()+key.slice(1)}:
${count}</span>
              </div>
            </div>
          `;
        }
        html += '<h2>Sample Tweets with Sentiment</h2>';

        // Show top 15 samples with highlights
const maxSamples = 15;
        analyzedEntries.slice(0, maxSamples).forEach(entry => {           const
safeText = sanitizeText(entry.text);           const emotionClass =
getEmotionClass(entry.score);           html += `<div class="tweet
${emotionClass}" title="Sentiment Score:
${entry.score}">${safeText}</div>`;
        });

        resultsEl.innerHTML = html;
      },
      error: function(err) {
        document.getElementById('results').innerHTML = '<p
style="color:#f44336;textalign:center;">Error reading CSV file. Please check your file and try
again.</p>';
      }
    });
  });
```

</script>
</body>
</html>

15. Future scope

Feature Scope*: Sentiment Analysis During a Product Launch*

Data Ingestion

- *Live social media feeds (Twitter, Reddit, Instagram comments)*
- *Customer feedback forms / emails*
- *App reviews or e-commerce product reviews*

16. Team Members and Roles

HARINI.S - *Data preprocesssing, Flochart , objectives*

ABARNA.R- *codes ,EDA ,Feature engineering*

GAYATHRI.S - *Model building, Abstract, problem statement*

DIVYA.V - *Model evolution, Deployment, future scope*

DANALAKSHMI.B - *Data description, system requirement* dhanalakshmi166 now

DOC-20250508-WA...	5 days ago
README.md	now
Requirements.txt	now
app .html	now
sentiment analysis ...	now
sentiment_analysis...	now
sentimentdataset.c...	now

README