

# **Gen-AI Unit 1 Project**

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**Section: F**

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## **Problem Statement: Customer Feedback**

### **Analyzer:**

### **Goal:**

*The goal of this project is to analyze customer feedback and product reviews and identify whether the customers are happy or unhappy. The system classifies feedback into Positive, Neutral, or Negative sentiment using an artificial intelligence model.*

### **Tech Used:**

- Python
- Hugging Face Transformers
- `pipeline('sentiment-analysis')`
- Pre-trained Model: `cardiffnlp/twitter-roberta-base-sentiment`

### **Abstract:**

*This project implements a Customer Feedback Analyzer system using Natural Language Processing. The system takes customer reviews stored in a CSV file and analyzes the sentiment of each comment automatically.*

*A pre-trained transformer model trained on social media data is used to understand informal language, slang, and emojis commonly found in customer feedback. The project is developed using Python and the Hugging Face Transformers library. This system demonstrates how artificial intelligence can be used to analyze large volumes of user feedback efficiently.*

## **What I Learned:**

*In this project, I learned how sentiment analysis works using transformer-based language models. I understood how pre-trained models can analyze text and determine whether the sentiment is positive, neutral, or negative.*

*I also learned how Hugging Face pipelines simplify complex NLP tasks such as text preprocessing, model loading, and prediction. Additionally, I gained experience working with CSV datasets and integrating them with AI models in Python.*

## **What I Built:**

*I built a Customer Feedback Analyzer system where customer reviews are read from a CSV file and analyzed using a sentiment analysis pipeline. The system processes each feedback comment and predicts its sentiment along with a confidence score.*

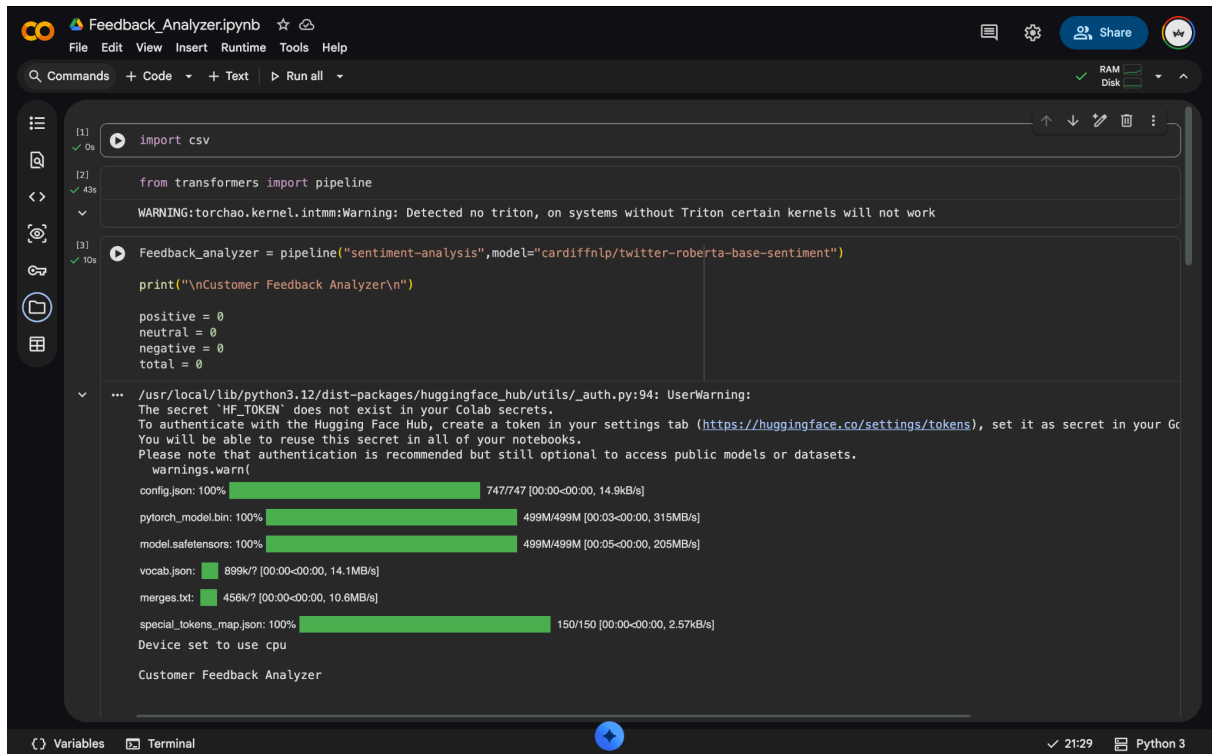
*The model used in this project is trained on social media data, making it suitable for analyzing informal customer feedback. The project demonstrates the practical use of Natural Language Processing in understanding customer opinions.*

## Screenshots:

### 1. Screenshot of the CSV dataset (*Feedback.csv*):

Feedback.csv		
Feedback.csv		
	id	text
1	1	This phone is🔥🔥 totally worth the money!
2	2	Worst update ever... my phone is dead now 💀
3	3	Meh, the product is okay I guess.
4	4	Customer service was trash 😞
5	5	Love this brand, always delivers ❤️
6	6	Not bad, but could have been better.
7	7	Absolutely horrible experience, never buying again.
8	8	Pretty decent for the price tbh.
9	9	I'm so disappointed, this is not what I expected.
10	10	Works fine, nothing special.
11	11	Best purchase I've made this year 🔥
12	12	Waste of money, don't fall for the hype.
13	13	Average product, nothing impressive.
14	14	Support team actually helped me, surprised!
15	15	Battery life sucks big time 😫
16	16	Honestly loving it so far!
17	17	Product arrived late but works fine.
18	18	Terrible packaging, item damaged.
19	19	This is so good omg 🥰
20	20	I regret buying this.
21	21	Solid build quality, feels premium.
22	22	Worst customer service experience ever.
23	23	Does what it says, no complaints.
24	24	Kinda overpriced for what it offers.
25	25	Super smooth performance 🔥
26	26	Not satisfied at all.
27	27	Okayish product, expected more.
28	28	Very happy with this purchase!
29	29	Stopped working after a week 💀
30	30	The design looks really cool.
31	31	Pathetic quality, very cheap materials.

## 2. Screenshot of the Python code execution:



The screenshot shows a Jupyter Notebook titled "Feedback\_Analyzer.ipynb". The code is as follows:

```
[1] import csv

[2] from transformers import pipeline

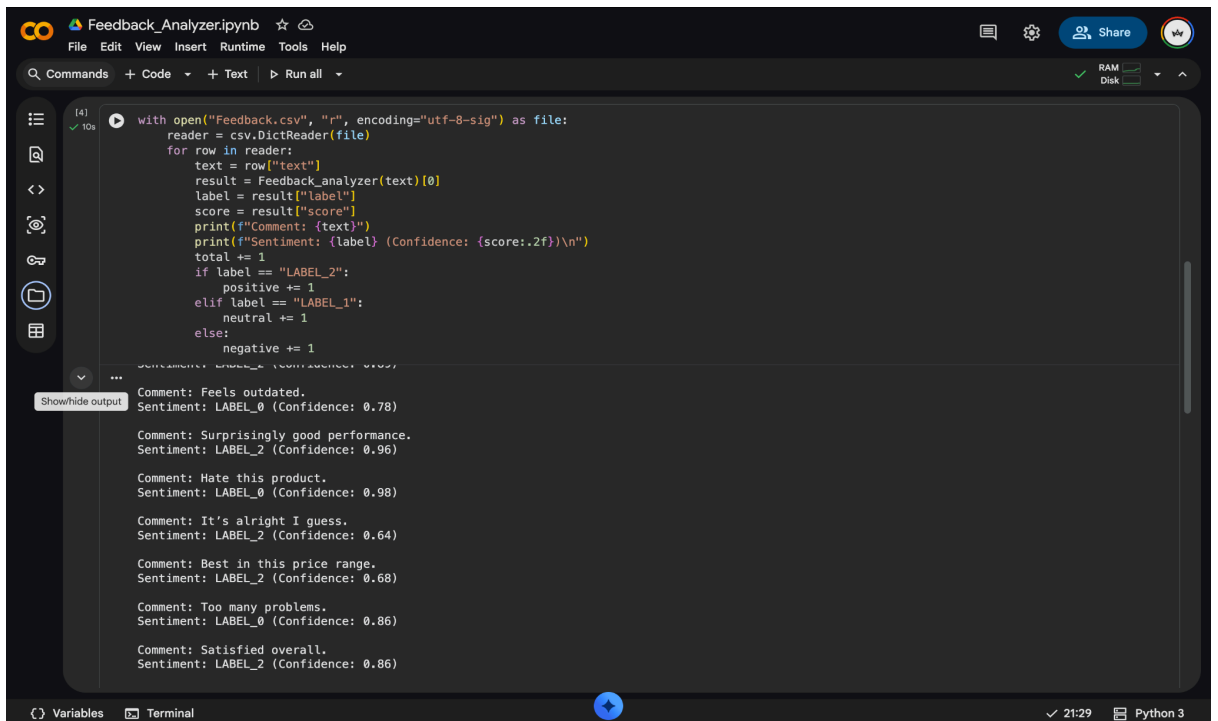
WARNING:torchao.kernel.intmm:Warning: Detected no triton, on systems without Triton certain kernels will not work

[3] Feedback_analyzer = pipeline("sentiment-analysis",model="cardiffnlp/twitter-roberta-base-sentiment")

print("\nCustomer Feedback Analyzer\n")

positive = 0
neutral = 0
negative = 0
total = 0
```

The output shows a warning from torchao and a progress bar for downloading the model. The progress bar indicates that the model is 100% downloaded. The output also shows the device set to use CPU and the Customer Feedback Analyzer initialized.



The screenshot shows the same Jupyter Notebook interface with the following code:

```
[4] with open("Feedback.csv", "r", encoding="utf-8-sig") as file:
    reader = csv.DictReader(file)
    for row in reader:
        text = row["text"]
        result = Feedback_analyzer(text)[0]
        label = result["label"]
        score = result["score"]
        print(f"Comment: {text}")
        print(f"Sentiment: {label} (Confidence: {score:.2f})\n")
        total += 1
        if label == "LABEL_2":
            positive += 1
        elif label == "LABEL_1":
            neutral += 1
        else:
            negative += 1
```

The output shows the sentiment analysis results for each comment in the CSV file. The output is as follows:

```
Comment: Feels outdated.
Sentiment: LABEL_0 (Confidence: 0.78)

Comment: Surprisingly good performance.
Sentiment: LABEL_2 (Confidence: 0.96)

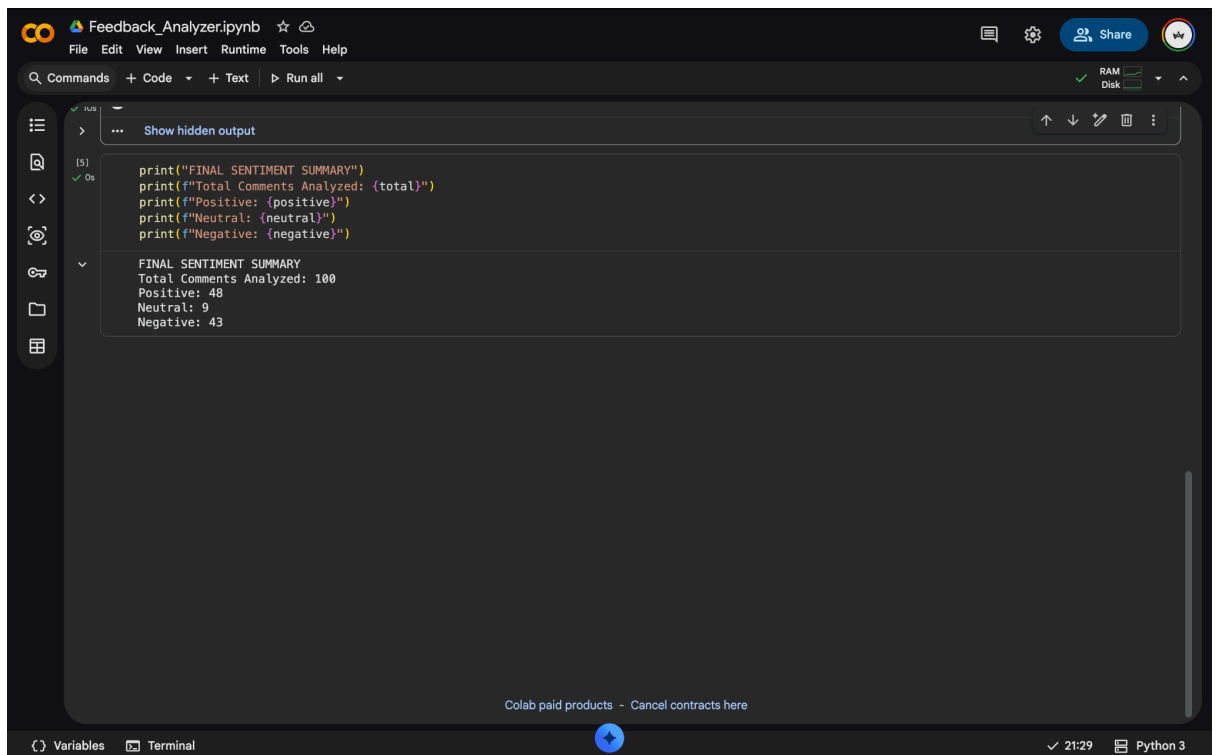
Comment: Hate this product.
Sentiment: LABEL_0 (Confidence: 0.98)

Comment: It's alright I guess.
Sentiment: LABEL_2 (Confidence: 0.64)

Comment: Best in this price range.
Sentiment: LABEL_2 (Confidence: 0.68)

Comment: Too many problems.
Sentiment: LABEL_0 (Confidence: 0.86)

Comment: Satisfied overall.
Sentiment: LABEL_2 (Confidence: 0.86)
```



The screenshot shows a Google Colab notebook interface. The notebook is titled "Feedback\_Analyzer.ipynb". The code cell contains the following Python code:

```
print("FINAL SENTIMENT SUMMARY")
print(f"Total Comments Analyzed: {total}")
print(f"Positive: {positive}")
print(f"Neutral: {neutral}")
print(f"Negative: {negative}")
```

The output of the code cell is displayed below the code:

```
FINAL SENTIMENT SUMMARY
Total Comments Analyzed: 100
Positive: 48
Neutral: 9
Negative: 43
```

The interface includes a menu bar with options like File, Edit, View, Insert, Runtime, Tools, and Help. There is also a toolbar with icons for commands, code, text, and running all cells. The bottom status bar shows "Variables", "Terminal", and the current time "21:29" along with the Python version "Python 3".

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## **Conclusion:**

***This project successfully demonstrates the use of a pre-trained transformer model for customer feedback analysis. The system accurately classifies feedback into positive, neutral, and negative sentiments. This project shows how artificial intelligence and NLP techniques can be applied to real-world problems such as analyzing customer reviews and improving user experience.***