Social Media Sentiment Analysis

AI & Data Science Internship Project — Logicbox IT Solutions

---

1. Project Overview

This project was developed as part of a three-month internship at **Logicbox IT Solutions**. The objective was to apply **Natural Language Processing (NLP)** and **Machine Learning (ML)** techniques to classify social media content (tweets) into sentiment categories: **Positive** and **Negative**.

The project simulates a real-world use case where sentiment analysis supports digital marketing teams in measuring audience engagement and optimizing content strategies.

---

2. Dataset Description

- **Source:** Sentiment140 Dataset (Kaggle)
- **Sample Size Used:** 10,000 tweets (balanced)
- **Columns Used:** text, sentiment
- **Labels:**
    - 0 = Negative
    - 4 = Positive
      (Neutral class excluded for binary classification)

---

3. Data Preprocessing

The following preprocessing steps were applied:

- Removal of:
    - Mentions (e.g., @user) ○ Hashtags ○ URLs
    - Non-alphabetic characters
- Lowercasing of text
- Tokenization and stopword removal
- Word stemming using Porter Stemmer
- TF-IDF vectorization of cleaned text

---

4. Technologies Used

- **Programming Language:** Python
- **Libraries:**
  - Pandas, NumPy
  - NLTK (Natural Language Toolkit)
  - Scikit-learn
  - Matplotlib, Seaborn
- **Platform:** Google Colab
- **Version Control:** GitHub

---

5. Model Summary

- **Model Used:** Logistic Regression
- **Text Representation:** TF-IDF (Top 5,000 Features)
- **Split:** 80% Training / 20% Testing
- **Evaluation Metrics:** ○ Accuracy ○ Precision ○ Recall ○ F1-Score ○ Confusion Matrix

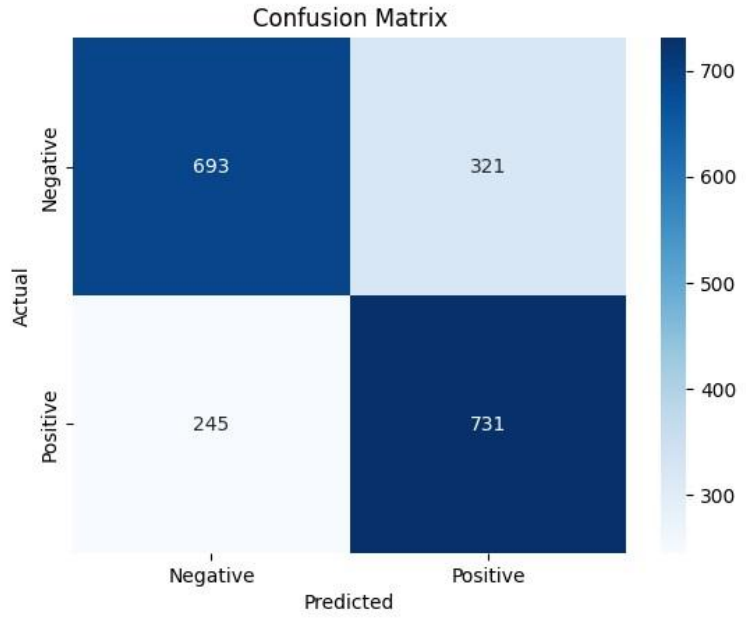
---

6. Model Performance

Final evaluation on the test dataset (1,990 samples):

- **Accuracy:** 71.56%
- **F1-Score:** ~0.72
- **Precision (Positive):** 0.69
- **Precision (Negative):** 0.74

Confusion Matrix:



	Predicted Negative	Predicted Positive
Actual Negative	693	321
Actual Positive	245	731

---

7. Internship Context

This project was carried out under the internship at **Logicbox IT Solutions**, a company focused on digital marketing, application development, and customer engagement solutions. The project reflects an internal contribution exploring how AI/ML techniques can be applied to analyze public sentiment and support marketing strategy.

---

8. Contact

For any queries or collaborations, please connect via

GitHub : https://github.com/yashdeep88.

LinkedIn : https://www.linkedin.com/in/yash-tatwade-488002376/.