

# **SENTIMETRICS**

**A SENTIMENTAL ANALYSIS**

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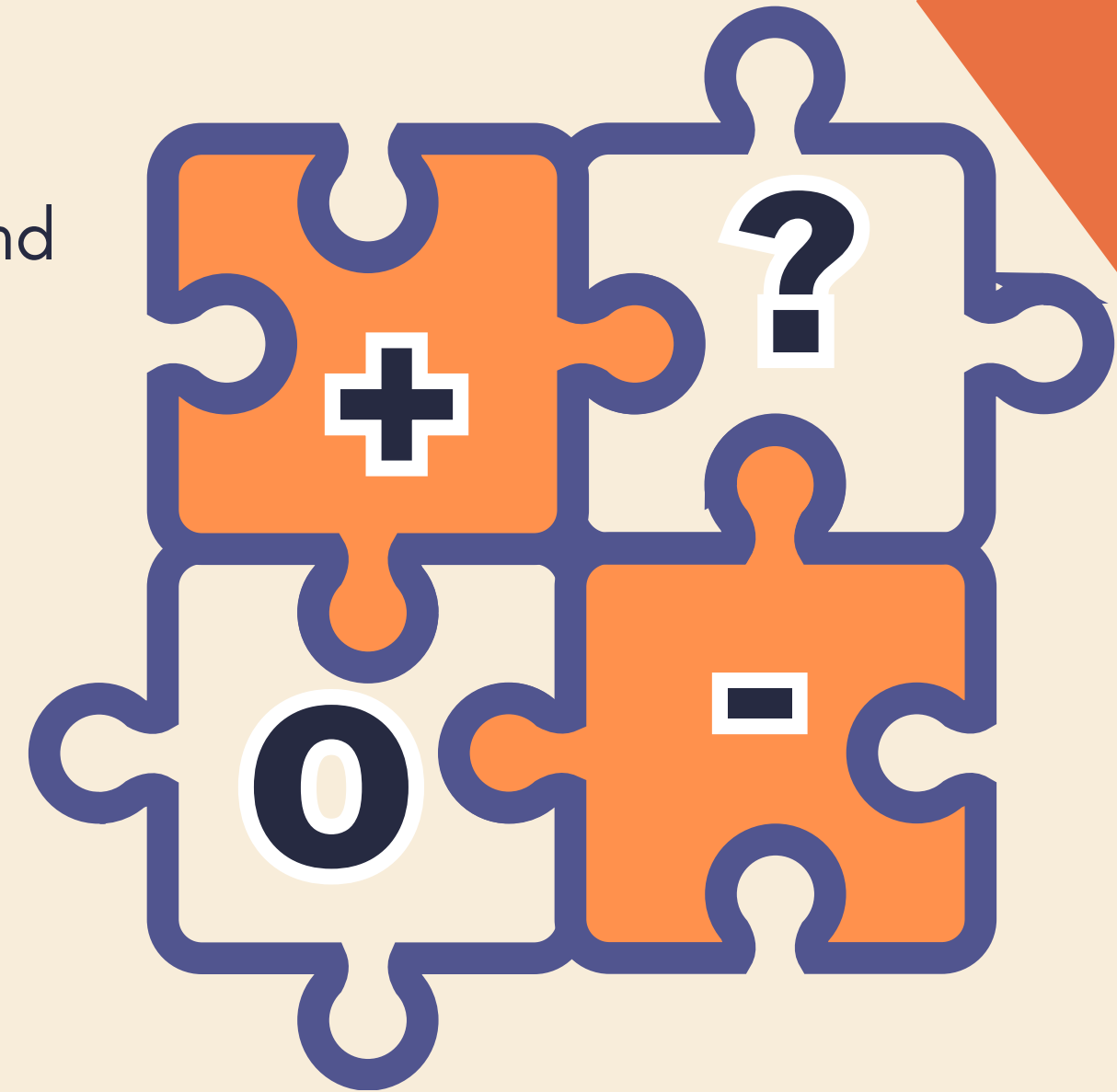
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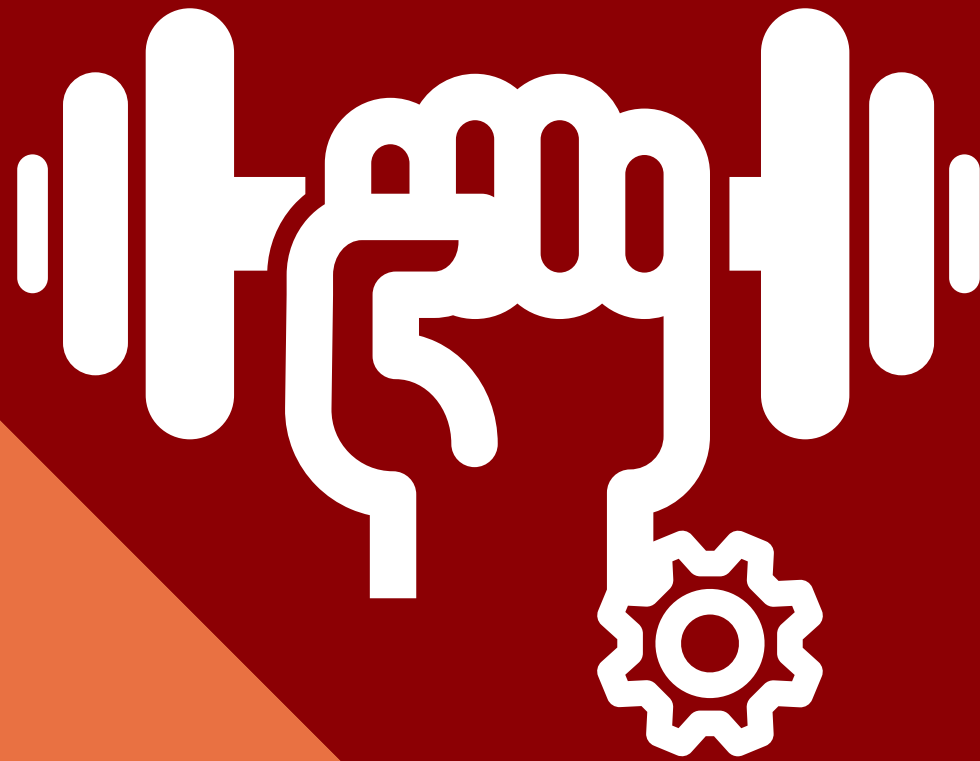
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# INTRODUCTION

- What is Sentiment Analysis?
  - Process of analyzing textual data to identify emotions and opinions.
  - Classifies text into categories: Positive, Negative, Neutral.
- Why Product Reviews?
  - Helps businesses understand consumer feedback.
  - Provides actionable insights for product improvements.
  - Enhances customer experience and decision-making.



## OBJECTIVES



- To analyze product reviews and classify them into Positive, Negative, and Neutral sentiments.
- To leverage pre-trained NLP models like BERT and Vader for efficient analysis.
- To empower businesses with actionable insights for better products and services.
- To build a scalable and user-friendly platform for sentiment visualization and analytics.

# NOVELTY OF THE PROJECT

## 1. Subjectivity in Star Ratings:

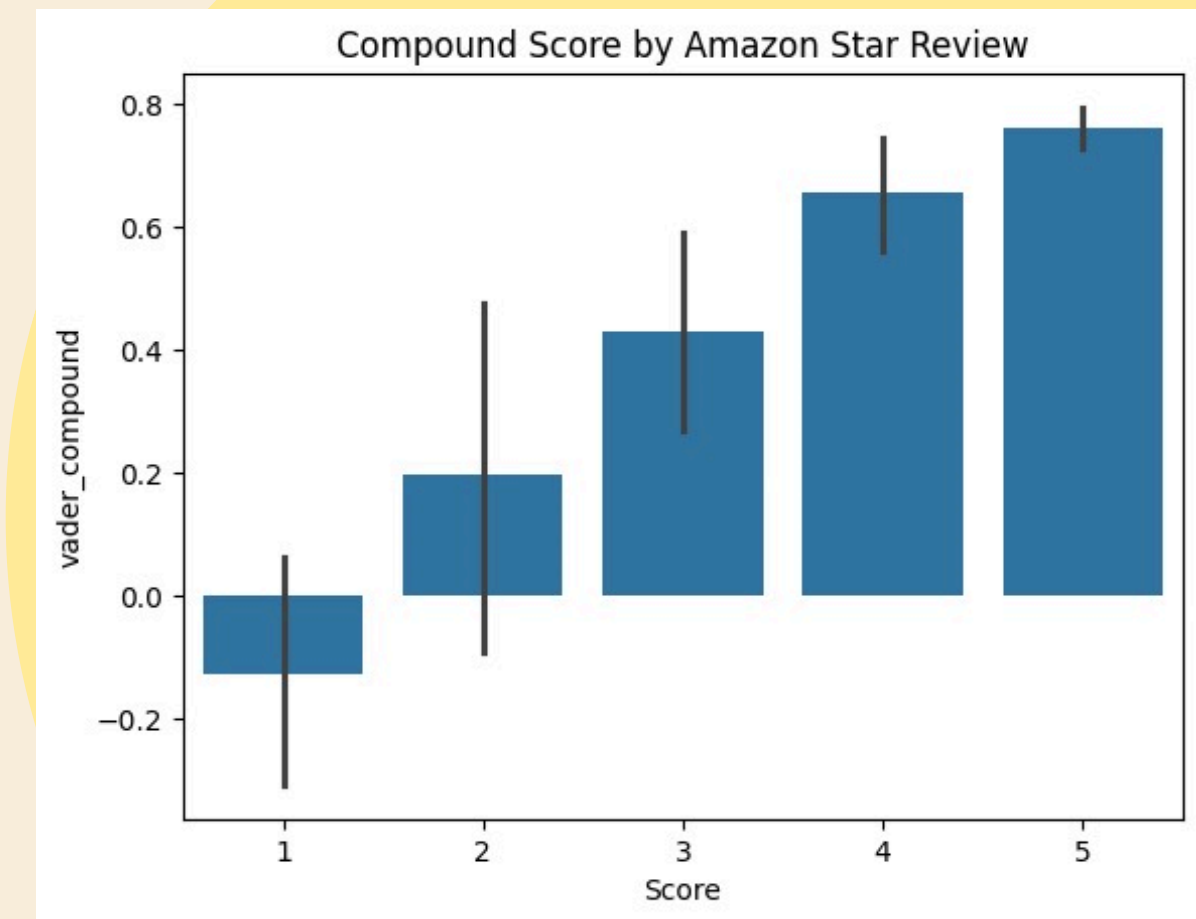
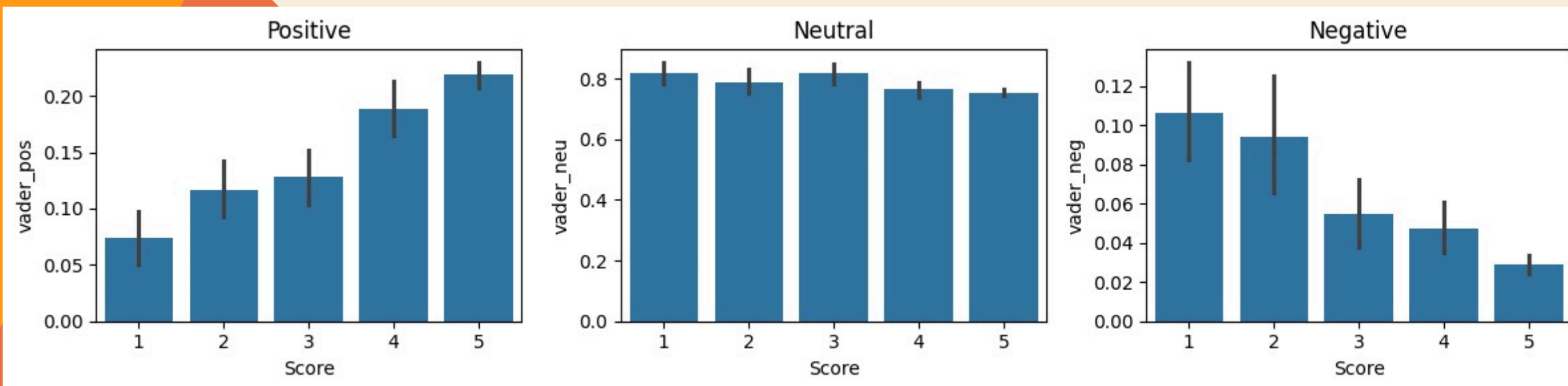
- Bridges the gap between numerical ratings (stars) and subjective written reviews.
- Accurately identifies sentiment even when user reviews conflict with the given star rating (e.g., positive review with 2 stars).

## 2. Pre-trained NLP Models:

- Utilizes advanced models like BERT and VADER for nuanced understanding of sentiment.
- Adapts to the complexity of natural language with superior accuracy.

## 3. Real-World Scenarios:

- Handles ambiguous cases like sarcasm, mixed sentiments, and contextual nuances effectively.



# NOVELTY OF THE PROJECT

## 4. Fine-Grained Analysis:

- Goes beyond binary classification to include Neutral category, enabling more granular insights.

## 5. Dynamic Feedback Loop:

- Potential to integrate continuous learning for improved model performance over time.

## 6. Multilingual Language Support:

- Cross-Language Sentiment Analysis: The approach supports reviews in multiple languages, enabling accurate sentiment classification across diverse linguistic contexts.
- Language-Agnostic Model: Leverages multilingual NLP models, like multilingual BERT, to handle sentiment analysis regardless of the language used in the review.
- Cultural Sensitivity: Adapts to cultural nuances and variations in sentiment expression, ensuring that the model accurately understands sentiment in different cultural settings.



# APPROACH

## Step 1: Data Collection

- Utilize publicly available datasets of product reviews.

## Step 2: Data Cleaning

- Remove noise (e.g., special characters, irrelevant words).
- Handle missing or incomplete data.

## Step 3: Model Training

Backend (Python):

1. Pre-trained NLP models:
  - Fine-tune BERT/SBERT for sentiment classification.
  - Use Vader for quick sentiment analysis.
2. Save trained model with Pickle.
3. Implement Flask to create API endpoints for:
  - Sending text for analysis.
  - Returning sentiment results.



# APPROACH

## Step 4: Deployment

- Save the trained model using Pickle.

Frontend (HTML/CSS):

- Build a web page with a text input field for reviews.

Display:

- Sentiment (Positive/Negative/Neutral).
- Review statistics and visualizations.
- Use CSS for styling and responsiveness.
- Backend implementation via Flask.

## Step 5: Output Visualization

- Display analysis results in an elegant user interface.





# TOOLS AND TECHNOLOGIES

- **Programming Languages:**
  - Python
- **Libraries & Frameworks:**
  - NLP: Hugging Face Transformers, NLTK, Vader.
  - Data Processing: Pandas, NumPy.
  - Model Deployment: Flask.
- **Frontend Tools:**
  - HTML, CSS.
  - Optional: Bootstrap for responsiveness.
- **Storage:**
  - Trained model serialized with Pickle.



# RESULTS



Analyze the sentiment of your review quickly and accurately.

Je l'ai acheté auprès du même vendeur le 17 février pour Rs. 1900 et c'est le meilleur joystick pour le prix que vous payez. Il dispose d'une gâchette, d'un interrupteur à chapeau qui peut être utilisé pour changer de point de vue et de 11 boutons de clic). Il dispose d'un levier d'accélérateur qui est sensible en raison de sa courte plage de déflexion, mais vous pouvez le maîtriser en quelques essais. J'ai trouvé le joystick robuste et confortable pour une utilisation prolongée. Vous pouvez tourner le manche horizontalement pour les commandes du gouvernail, ce qui donne une réponse rapide mais précise. Cela a considérablement amélioré mon expérience du simulateur de vol et j'en suis satisfait.

Analyze Sentiment

# RESULTS

## 💎 Sentiment Analysis Results 💎

**Review:** Je l'ai acheté auprès du même vendeur le 17 février pour Rs. 1900 et c'est le meilleur joystick pour le prix que vous payez. Il dispose d'une gâchette, d'un interrupteur à chapeau qui peut être utilisé pour changer de point de vue et de 11 boutons de clic). Il dispose d'un levier d'accélérateur qui est sensible en raison de sa courte plage de déflexion, mais vous pouvez le maîtriser en quelques essais. J'ai trouvé le joystick robuste et confortable pour une utilisation prolongée. Vous pouvez tourner le manche horizontalement pour les commandes du gouvernail, ce qui donne une réponse rapide mais précise. Cela a considérablement amélioré mon expérience du simulateur de vol et j'en suis satisfait.

**Translated Review:** I bought it from the same seller on February 17 for Rs. 1900 and it is the best joystick for the price you pay. It has a trigger, a hat switch that can be used to change your point of view and 11 click buttons).It has an accelerator lever that is sensitive due to its short deflection range, but you can master it in a few tests.I found the joystick robust and comfortable for prolonged use.You can turn the handle horizontally for commands from the rudder, which gives a quick but precise response.This has considerably improved my experience in the flight simulator and I am satisfied with it.

### VADER Results:

Positive: 0.187

Neutral: 0.803

Negative: 0.01


Compound: 0.9667

### RoBERTa Results:

Positive: 0.94564116

Neutral: 0.05106658

Negative: 0.0032922116

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**THANK YOU!**