



# Advanced Sentiment Analysis Tool

Leveraging State-of-the-Art NLP Techniques for Interactive Sentiment Analysis.

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# Introduction to Sentiment Analysis

Sentiment analysis is crucial across domains. This includes marketing, finance, and politics. It helps understand public opinion.

## What is it?

Determining emotional tone in text.

## Why?

Informs decisions across industries.

## How?

Uses computational techniques.



sentiment analyzes



survey responses

## Tool Architecture and Core Components

This Python-based tool uses Transformers and Gradio. It integrates three sentiment analysis methods.



**Python-based**



**Three models**



**Gradio Interface**

# Sentiment Analysis Methods Explained

We use RoBERTa, BART, and VADER. Each offers unique sentiment detection.

## RoBERTa

Fine-tuned for high accuracy.  
Understands context effectively.

## Zero-Shot (BART)

Classifies without specific training.  
Useful for rare sentiments.

## VADER

Lexicon-based for real-time analysis. Handles emoticons and slang.



# Gradio Interface: Interactive Sentiment Analysis

Our Gradio interface offers real-time sentiment analysis. It allows side-by-side comparison.



## User Input

Enter text for analysis



## Real-time Results

See immediate sentiment scores



## Method Comparison

Compare RoBERTa, BART, VADER

# Use Cases and Applications

Our tool applies to social media monitoring. It is helpful for financial and customer feedback analysis.

## Brand Reputation

Monitor social media for brand sentiment.

## Market Sentiment

Analyze financial market sentiment.

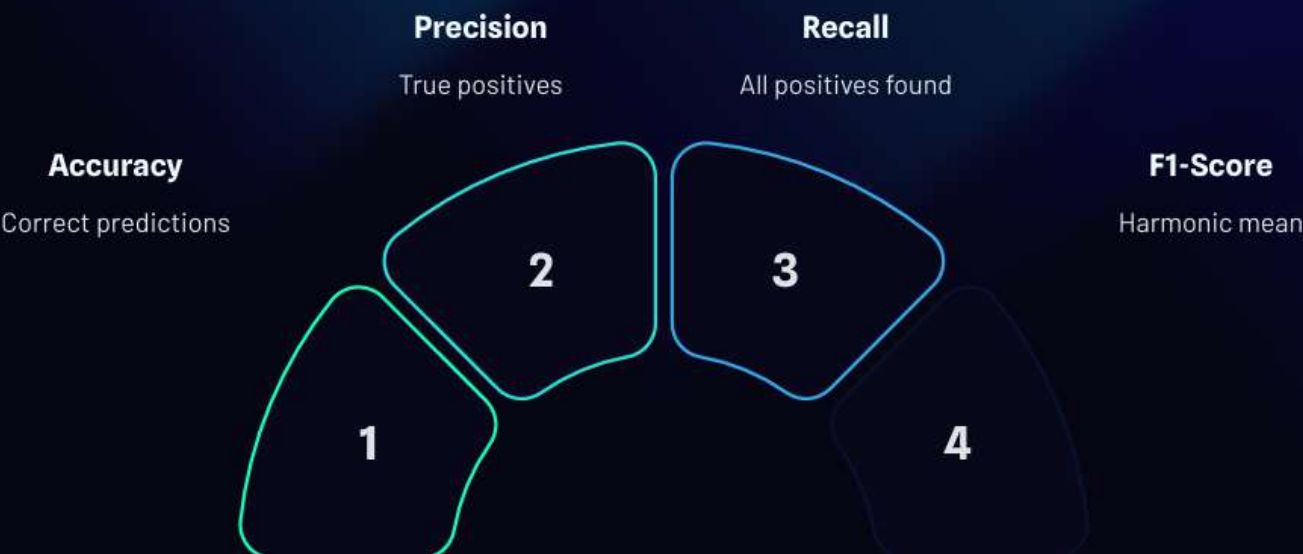
## Product Improvement

Assess customer feedback for enhancements.



# Performance Evaluation and Metrics

We measure accuracy and F1-score. We benchmark against standard datasets.





## Conclusion and Future Directions

Our tool offers robust sentiment analysis. Future work includes multilingual support.

### Integration

Combine with NLP tasks.

### Multilingual

Add language support.

### Sarcasm Detection

Improve sentiment accuracy.