

The Social Barometer

01 INTRODUCTION

Social proof—the tendency to follow others' behavior—drives much of today's online engagement. Likes, comments, and shares shape how content is perceived and spread. The Social Barometer is a Python-based dashboard that analyzes real-time Instagram data using Instaloader, machine learning, and NLP to uncover actionable insights.

Core Features:

- Real-time Instagram profile analysis
- Trend visualization from captions, hashtags, and images
- Sentiment & sarcasm detection (via VADER and deep learning)
- User behavior prediction using clustering
- Image analysis with ResNet50

By tracking KPIs like follower growth and engagement, the system helps brands align content with audience expectations and sharpen marketing strategies. In a world where content moves fast, The Social Barometer makes sense of the noise.

MODULES:

- Image Clustering with ResNet50 + KMeans
Extracted features using a pre-trained ResNet50 model (excluding top layers) and applied KMeans clustering to group similar images.
- Sentiment Analysis using EmoSent
Analyzed post captions using EmoSent to classify them as Positive, Negative, or Neutral.
- Sarcasm Detection
Developed a deep neural network to detect the sarcasm.

02 LIBRARIES USED



03 MODELS

Model Results:

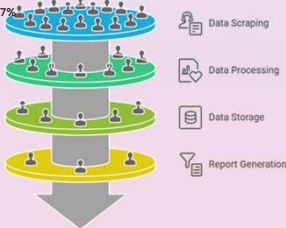
- Image Clustering 85.79%
- Sentiment Analysis 58.67%
- Sarcasm Detection 98%

TARGET USERS:

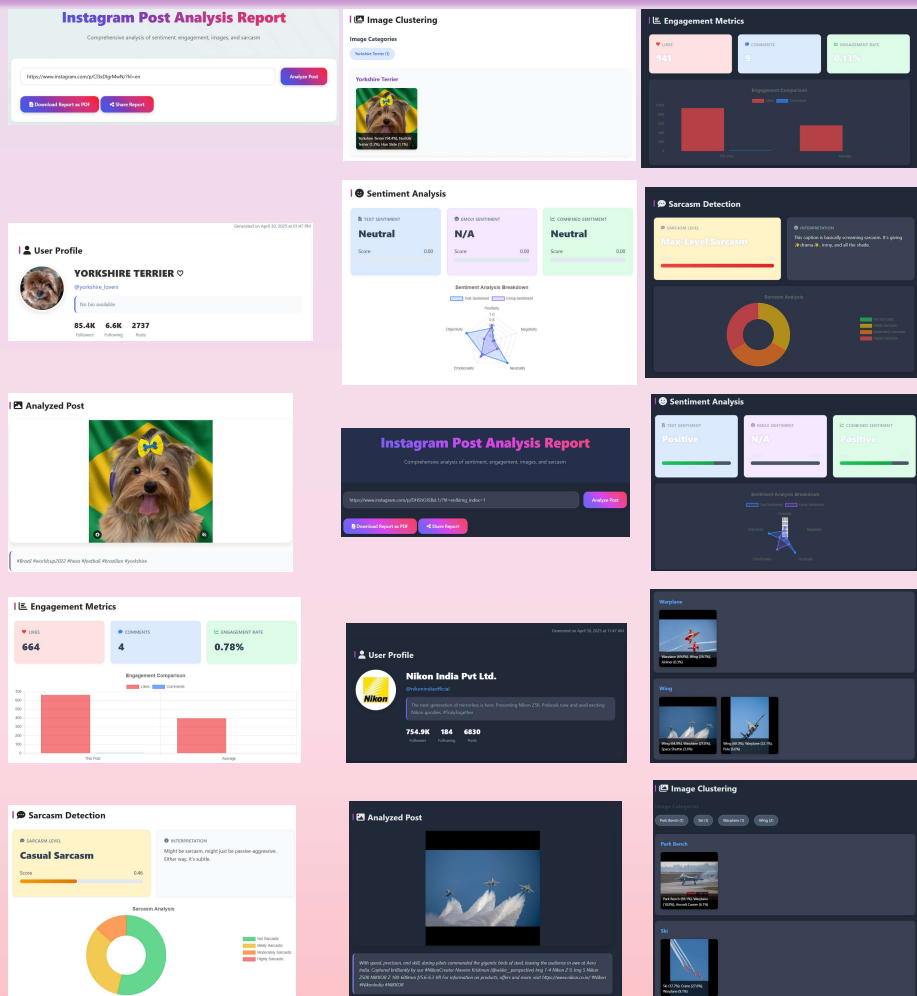
- Digital Marketers
- Influencers & Creators
- Campaign Managers
- Journalists & PR Teams
- Business Owners
- Nonprofits
- Activists

NEED FOR THE SYSTEM:

- Manual analysis of posts is slow, biased, and inefficient. With growing data and rapid trends, businesses need:
- Scalable automation
- Emotion & sentiment detection
- Visual insights from image content
- Modular architecture for fast upgrades



04 USER INTERFACE



05 FUTURE WORK

Cross-Platform

The system can be expanded to analyze data from multiple platforms like Twitter (X), LinkedIn, TikTok, Reddit, and YouTube. This will allow tracking of sentiment shifts, viral trends, and campaign feedback instantly.

Time-Based and Emotion Trend Analysis

Adding temporal tracking can reveal how public opinion or engagement changes over time. Emotion detection (joy, anger, fear, surprise) can further refine audience insights for political or brand analysis.

Multilingual and Transformer-Based Enhancements:

Incorporating models like mBERT and XLM-R can enable analysis of posts in different languages, making the system more useful for global sentiment analysis and international campaigns.

Influence and Network Analysis with GNNs

Graph Neural Networks can help detect influential users, fake engagement clusters, and information spread patterns by analyzing follower and interaction networks.

Advanced Visualization and User Interface

Future versions can include dashboards with heatmaps, sentiment timelines, and real-time metrics using Flask, Dash, or Streamlit—making insights more accessible and actionable.

Under Guidance of:

Mrs. Bhavana Hotchandani

Student Details:

Name : Nistha Chauhan

Enrollment No. : IU2246360017

Branch : Bsc Data Science

Semester : 6