

SOCIAL MEDIA SENTIMENT ANALYSIS FOR COLLEGE BRANDING

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Abstract: Social media serves as a vital platform for individuals and organizations to share experiences and opinions. Colleges utilize social media reviews to engage with students, alumni, and prospective applicants while shaping their public perception. This study proposes a sentiment analysis system employing advanced Machine Learning (ML) techniques to analyze college-related social media reviews. Using state-of-the-art models such as BERT (Bidirectional Encoder Representations from Transformers) and LSTMs (Long Short-Term Memory), this approach enhances sentiment classification, including gender-based sentiment analysis. The system provides educational institutions with actionable insights to refine branding strategies, improve student engagement, and strengthen institutional reputation.

Keywords: Social Media, College Branding, Sentiment Analysis, Machine Learning, NLP, BERT, LSTM, Emotion Categorization.

1. INTRODUCTION

The perception of colleges on social media plays a crucial role in shaping their reputation. Traditional sentiment analysis methods fail to capture contextual nuances, sarcasm, and demographic influences. This research leverages deep learning techniques to enhance sentiment classification and demographic-specific analysis. The system aids colleges in monitoring sentiment trends and optimizing engagement strategies.

2. METHODOLOGY

The proposed sentiment analysis system for college branding integrates advanced Machine Learning (ML) and Deep Learning (DL) techniques to analyze and classify sentiments from social media data. The methodology comprises the following key stages:

A. Data Collection

Social media data is collected from platforms such as Twitter, Facebook, and Instagram using official APIs and web scraping techniques. The collected text data undergoes preprocessing, which includes:

Tokenization: Splitting text into individual words or phrases.

Stopword Removal: Eliminating common words that do not contribute to sentiment meaning.

Stemming and Lemmatization: Reducing words to their base or root form.

Noise Removal: Filtering out URLs, emojis, hashtags, and special characters.

B. Sentiment Analysis Using Deep Learning

To achieve high accuracy in sentiment classification, the system employs the following deep learning techniques:

1. BERT (Bidirectional Encoder Representations from Transformers): A transformer-based model that captures contextual dependencies and improves the understanding of complex sentiments, including sarcasm and mixed emotions.

2. LSTM (Long Short-Term Memory): A recurrent neural network (RNN) model capable of learning long-term dependencies in sequential text data, improving sentiment prediction accuracy.

C. Gender-Based Sentiment Analysis

The system integrates a gender classification model that categorizes social media users' sentiments based on their demographic attributes. This enables institutions to analyze sentiment trends across different gender groups and tailor branding strategies accordingly.

D. Performance Evaluation

The performance of the correctness of sentiment predictions.

Precision: Determines the proportion of correctly identified positive sentiments.

Recall: Assesses the model's ability to detect all relevant sentiments.

3. MODULES

The system is divided into three main functional modules, each responsible for a specific aspect of sentiment analysis.

A. Data Preprocessing Module

Cleans and normalizes textual data by removing unnecessary elements such as URLs, special characters, and stopwords.

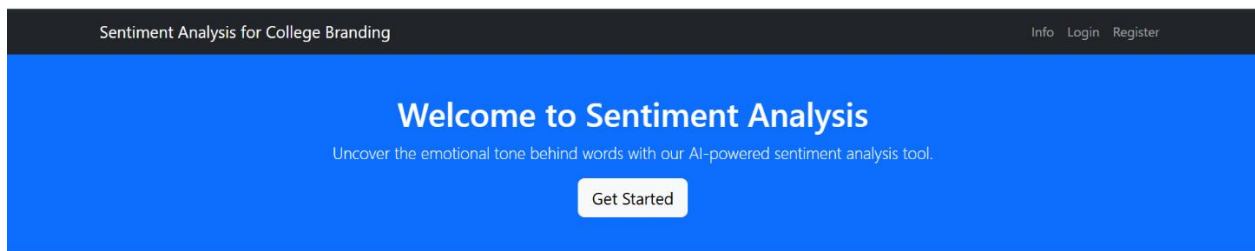
B. Sentiment Classification Module

Implements BERT and LSTM for accurate sentiment classification into three categories: Positive, Negative, and Neutral.

C. Visualization and Reporting Module

Provides graphical representations such as bar charts, line graphs, and pie charts to track sentiment trends and institutional reputation over time.

4. RESULTS



What is Sentiment Analysis?

Sentiment analysis is the process of using natural language processing (NLP) to determine whether the sentiment expressed in text is positive, negative, or neutral. Our platform provides insights that can help businesses, researchers, and individuals make data-driven decisions.



Real-Time Analysis



Accurate Insights



Custom Solutions



Register

Name

Email address

Password

Register

Already have an account? [Login here.](#)

Login

Email address

Password

Don't have an account? [Register here.](#)

Sentiment Analysis

Upload a CSV file containing text data (one sentence per row) or enter text manually.

Choose CSV File

Choose File

No file chosen

Enter Text

Sentiment Prediction

Predicted Sentiment: **Positive**

Sentiment Analysis

Upload a CSV file containing text data (one sentence per row) or enter text manually.

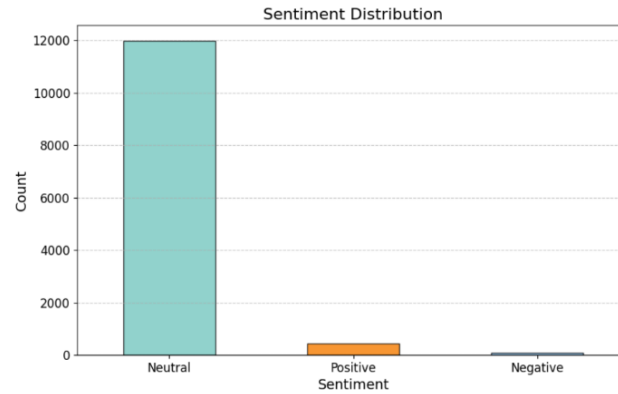
Choose CSV File

Choose File

college.csv

Enter Text

Analyze Sentiment

Sentiment Distribution**5. CONCLUSION**

This study successfully implements a sentiment analysis system using ML and DL techniques for college branding. By incorporating models like BERT and LSTMs, it enhances sentiment classification accuracy and provides actionable insights for educational institutions.

6. FUTURE SCOPE

Future enhancements include multilingual sentiment analysis, improved sarcasm detection, real-time social media integration, emotion detection, and real-world deployment in multiple universities.

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