**A**

**SYNOPSIS**

**of**

**MINOR PROJECT**

**on**

**Text sentiment analysis**



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***Problem Statement:***

With the exponential growth of textual data on the internet, there is an increasing demand for accurate and efficient sentiment analysis tools. Traditional methods often fall short in handling the nuances and scale of modern data sources such as social media, customer reviews, and news articles.

***Brief Description:***

This project aims to develop a robust sentiment analysis system capable of accurately classifying sentiment (positive, negative, neutral) from diverse sources of text data. The system will leverage advanced natural language processing (NLP) techniques and machine learning algorithms to achieve high accuracy and scalability.

***Objective and Scope:***

The primary objective is to build a scalable sentiment analysis solution that can process large volumes of text data in real-time. The scope includes implementing state-of-the-art NLP algorithms, developing a user-friendly interface for interaction, and ensuring the system's reliability across various domains.

***Methodology:***

**1. Data Collection:** Gather text data from multiple sources.

**2. Preprocessing:** Clean and normalize text data to remove noise and inconsistencies.

**3. Feature Extraction:** Extract relevant features from text using NLP techniques like tokenization, vectorization, and wordEmbeddings.

**4. Sentiment Classification:** Apply supervised machine learning or deep learning models (e.g., SVM, LSTM) to classify sentiment.

**5. Evaluation:** Assess model performance using metrics such as accuracy, precision, recall, and F1-score.

**6. Deployment:** Integrate the sentiment analysis model into a deployable system with necessary APIs or interfaces.

***Hardware and Software Requirements:***

**- Hardware:** Standard server or cloud infrastructure capable of handling computational demands for NLP and machine learning tasks.

**- Software:** Programming languages (Python preferred), NLP libraries (NLTK, spaCy), machine learning frameworks (TensorFlow, Scikit-learn), web frameworks (Flask, Django) for interface development.

***Technologies:***

**Utilizing:**

**-** Natural Language Processing (NLP) techniques for text analysis.

- Machine Learning and Deep Learning algorithms for sentiment

**classification.**

**-** Web development frameworks for creating user interfaces.

***Testing Techniques:***

**-Unit Testing:**Validate individual components (e.g., preprocessing, classification) to ensure functionality**.**

**-Integration Testing:** Verify interactions between different modules of the sentiment analysis system.

**-Performance Testing:** Evaluate system response times and scalability under varying loads of text data**.**

***Project Contribution:***

This project aims to advance sentiment analysis capabilities by:

- Enhancing accuracy and scalability through innovative NLP techniques and machine learning models.

- Providing a practical tool for businesses to derive actionable insights from textual data, thereby improving decision-making processes.

This synopsis outlines the core components and goals of the sentiment analysis project, emphasizing its potential impact and technical approach.