**SENTIMENT ANALYSIS TOOL**

**Submitted for**

**Statistical Machine Learning CSET211**

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Submitted to

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1. **Introduction**
2. **Related Work (If Any)**

**Traditional Sentiment Analysis Techniques**

**Machine Learning Models**

**Deep Learning Models**

**Pre-trained Language Models**

**Hybrid Approaches**

**Real-World Applications**

**Rule-Based Sentiment Analysis**

**Challenges in Sentiment Analysis**

1. **Methodology**

**Problem Definition**

**Data Collection**

**Text Preprocessing**

**Keyword-Based Sentiment Scoring**

**Sentiment Classification**

**Interactive User Interface**

**Testing and Validation**

**Limitations**

**Future Enhancements**

1. **Hardware/Software Required**

**Hardware Requirements**

**Basic System Requirements:**

* + **Processor: Dual-Core or higher (e.g., Intel i3 or AMD equivalent)**
  + **RAM: At least 4GB (8GB recommended for smoother multitasking)**
  + **Storage: 500MB free space for code, libraries, and testing files**
  + **Operating System: Compatible with Windows, macOS, or Linux**

**Software Requirements**

1. **Programming Language and Libraries:**
   * **Python (version 3.7 or higher)**
   * **Required Python libraries:**
     + **re (Regular Expression module, built-in)**
     + **sys (for exiting the program, built-in)**
2. **Text Editor or Integrated Development Environment (IDE):**
   * **VS Code (Visual Studio Code)**
   * **PyCharm**
   * **Jupyter Notebook**
   * **IDLE (Python’s default IDE)**
3. **Operating System:**
   * **Windows, macOS, or Linux (compatible with Python)**
4. **Library/Package Manager:**
   * **pip (Python’s package manager, typically comes pre-installed with Python)**
5. **Command-Line Interface:**
   * **Terminal (macOS/Linux)**
   * **Command Prompt or PowerShell (Windows)**
6. **Experimental Results**

** The sentiment analysis tool is tested on a range of sample sentences with varying:**

* **Sentiments: Positive, Negative, Neutral.**
* **Complexity: Single keywords, negations, intensifiers, and combinations.**

** Examples include common statements, edge cases, and ambiguous sentences.**

1. **Conclusions**

 **Simplicity and Efficiency**:  
The tool is computationally lightweight, making it easy to implement and interpret, without the need for complex machine learning models or large datasets.

 **Accurate Keyword Handling**:  
The system performs well on sentences with clear sentiment expressions, accurately identifying positive or negative keywords and their intensities.

 **Negation Awareness**:  
Handling negation effectively flips sentiment (e.g., "not good" to negative), enhancing the accuracy of results.

 **Real-Time Interaction**:  
The user-friendly interface allows users to input text and instantly receive sentiment analysis results.

1. **Future Scope**

**Enhanced Keyword Dictionary**

* **Objective: Expand the lists of positive, negative, and intensifier keywords to improve coverage and accuracy.**
* **Details:**
  + **Add synonyms and context-specific words for various domains (e.g., movie reviews, product reviews, social media posts).**
  + **Include commonly used slang, abbreviations, and emojis for better real-world applicability.**

**Multilingual Support**

* **Objective: Extend the tool to analyze sentiment in languages other than English.**
* **Details:**
  + **Create keyword dictionaries for other languages.**
  + **Use natural language processing (NLP) libraries to handle translation and tokenization for multilingual text.**

1. **GitHub Link of Your Complete Project**

https://github.com/E23CSEU1854/SENTIMENT-ANALYSIS-TOOL.git