

**Emotion Detection NLP(Literature Review)**

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**1. INTRODUCTION**

Emotions have mesmerized researchers for a long. Emotion identification is currently widely being studied in neuroscience, psychology and cognitive sciences, computer sciences, and behavior sciences, as they are an important element of human nature. Most of the attention of researchers in computer science is paid to the field of human-computer interaction, especially in the field of emotion recognition because it is the main field in human-computer interaction. Human emotion demonstrates itself through facial expressions, speech utterances, writings, gestures and actions. Consequently, scientific research in emotion has been pursued along several dimensions and has drawn upon research from various fields. This paper addresses the task of emotion recognition by attempting to learn emotions from text automatically.

**Objective:** In this project we will be taking text as an input and classifying that text into emotions like- joy, sadness, fear, neutral, anger, shame, etc. using Natural Language Processing

**Algorithms and Machine Learning Models:**

Logistic Regression.

Random Forest Classifier.

Support Vector Machine (SVM.

**Data Preprocessing:**

Vectorization (CountVectorizer): Converts text data into numerical format, enabling machine learning algorithms to process the text.

Train-Test Split: The dataset is divided into training and testing sets, ensuring a fair evaluation of the models.

**Technologies and Libraries:**

Scikit-Learn: A core Python library for machine learning, used for building models and pipelines.

Pandas and Numpy**:** These libraries are used for efficient data manipulation and handling.

Seaborn: A visualization library employed for graphical representation of data distributions and insights.

**Dataset:** Comprises two columns, 'Emotion' and 'Text', including various emotions like joy, sadness, and neutral statements.

**2. Literature Survey on Emotion Recognition:**

A lot of research has been done in the area of emotion classification from text.

**1. Shritiranjan Satapathy et al.**

Approach: Bag of Words with bigrams and trigrams.

Dataset: ISEAR dataset and WordNet Affect.

Focus: Text normalization and emotion classification.

Method: Multinomial Naïve Bayes.

Result: Achieved promising results compared to VSM classifiers.

<https://www.researchgate.net/scientific-contributions/Sumit-Bhagwani-2048135235>

**2. Taner Danisman et al.**

Approach: Bag of Words.

Dataset: ISEAR and SemEval datasets.

Classification: Vector Space Model.

Scope: Focused on classifying emotions and valence in text.

Result: VSM outperformed other classifiers like Concept Net, Naïve Bayes, and SVM.

<https://www.researchgate.net/publication/327120380_Emotion_Detection_of_Tweets_using_Naive_Bayes_Classifier>

**3. Carlo Strapparava et al.**

Method: Unsupervised learning.

Dataset: News headlines from major newspapers and Google News.

Technique: Knowledge-based and corpus-based methods.

Task: Automatic identification of emotions in text.

Comparison: Evaluated against three SemEval Systems.

<https://www.researchgate.net/publication/220999486_Learning_to_identify_emotions_in_text>

**4. Shoushan LI and Chengging Zong et al.**

Method: Multiple SVM classifiers.

Feature Sets: Unigrams and POS features.

Task: Sentiment classification based on polarity.

Strategy: Classifier combination approaches.

Result: Combination approaches outperformed individual classifiers.

<https://www.researchgate.net/publication/325557363_Emotion_Detection_in_Text_a_Review>

**5. Sugimoto et al.**

Focus: Emotional expressions for text-to-speech engines.

Method: Frequency of words in text partitioned into nouns, adjectives, and adverbs.

Objective: Determining emotional class.

**6. Cecila Ovesdotter Alm et al.**

Approach: Supervised machine learning.

Technology: SNoW (Sparse Network of Windows) learning architecture.

Task: Recognition of emotional passages and determining valence.

Dataset: 22 fairy tales.

Result: Encouraging results for classification of emotional content.

<https://aclanthology.org/H05-1073/>

**7. Liu et al.**

Method: Commonsense approach using real-world knowledge.

Tool: Open Mind Commonsense corpus.

Technique: Combination of four linguistic models.

Application: Affective text analysis in email writing.

Result: Demonstrated robustness for affective text user interfaces.

<https://www.researchgate.net/publication/325557363_Emotion_Detection_in_Text_a_Review>

**Conclusion:**

This paper addresses an important and less examined area of sentiment research, that is, emotion identification from text.so our project is better due to :

**Integration of Modern Techniques**: project employs contemporary machine learning techniques, including pipelines and multiple models, ensuring a robust and scalable approach.

**Efficiency in Processing:** Utilizing streamlined data preprocessing methods and efficient algorithms, our project is likely faster and more resource-effective.

**Versatility in Model Selection**: The inclusion of different models (Logistic Regression, SVM, Random Forest) provides flexibility and allows for a comprehensive understanding of different classification behaviors and we get accuracy about 0.70

**Practical Application:** The development of a user-friendly Streamlit application demonstrates the project's readiness for real-world application and user interaction.

**Comprehensive Data Handling:** our project's use of effective data cleaning and feature extraction techniques ensures higher accuracy and reliability in emotion detection.

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