**3.1 Existing System**

There are various methods present for handling sentiment analysis; we must use the optimum for each case. By training on a known dataset, the machine learning method employs different learning algorithms to ascertain the sentiment. The lexicon-based method involves determining a review's emotion polarity based on the semantic orientation of its words or sentences. A text's subjectivity and viewpoint are measured by its "semantic orientation".

The rule-based technique scans a document for opinion words before classifying it according to the proportion of positive and negative words. It takes into account a variety of classification criteria, including dictionary polarity, negation and boosting words, idioms, emoticons, and mixed viewpoints, among others.

Each review is represented by statistical models as a combination of latent features and ratings. In order to cluster head words into aspects and sentiments into ratings, it is believed that aspects and their ratings can be represented by multinomial distributions. Another categorization is focused primarily on the organization of the text classification.

At the document, phrase, or word level. Sentence- or word-level classification can express a sentiment polarity for each sentence in a review or even for each word, as opposed to document-level classification, which seeks to identify a sentiment polarity for the entire review.

According to our research, the majority of approaches concentrate on the document-level. Additionally, we may distinguish between techniques that aim to score a review globally versus techniques that gauge the strength of sentiment for various parts of a product. Most approaches to global review classification that depend on machine learning simply take into account the polarity of the review (positive/negative) into account. More linguistic variables, such as intensification, negation, modality, and discourse structure, are used in solutions that aim for a more precise classification of reviews (Such as three- or five-star ratings).

They are 4 main models used in sentiment analysis. They are:

3.1.1 Rule based or Lexicon based approach :

It counts the number of individual values with positive and negative polarity to calculate the score. This method is not preferred when combinations of words are not proper and negation words are more and it is not used as it needs quick but constant maintenance.

3.1.2 Automated approach or Machine Learning approch :

It is one of the most standardized ways for sentiment analysis. Here we will collect labeled data with their respective polarities and we will process our data and train the algorithm.

3.1.3 Deep Learning Models :

These include Naive Bayes sentiment analysis approach and Deep learning algorithms.

Sentiment analysis using Deep learning Natural language processing methods are able to find the insights through the layers from the dataset collected from the twitter API to perform sentiment analysis.

3.1.4 Hybrid Approach :

It includes both the traditional way and the newly improved neural network learning methods. This process gives us an efficient and optimum way of processing the dataset.

To the present day there are various other methods which are being introduced. We will use the proved theorem and methods to find an optimal solution for finding the polarity of our tweets.

3.1.5 Types of Machine Learning available models :

