ISSN No:-2456-2165

Emotion Detection Using Text

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Abstract:- The Internet and communication technologies of today are extremely fast and dynamic. In the age of mobile phones and computers, the use of different communication channels, such as cell phones and computers, is very common. This project develops an Emotion Detection Model that takes sentence-level emotion into account. In natural language processing, content-based classification problems include concepts from both machine learning and natural language processing. Our technique employs direct emotional keywords in text as a means of identifying emotions. In order to increase the accuracy of the detection, words and phrases containing emotion-affect were also considered. We have thought about emotions like happiness, sadness, anger, and so on to help us recognise emotion in text. Human beings actually use these expressions. They are important investigations, as their findings have the potential to better express human emotions and help facilitate interpersonal communication.

Keywords:- *SVM, Python, Emotion Detection, Testing.*

I. INTRODUCTION

Our daily life presents us with different situations, and we come to know how we feel about them. Emotion is a strong feeling about how humans are situated with regard to each other or their relationships. Facial expression is used to display feelings and Emotion. Love, joy, anger, sadness, fear, and surprise are the primary emotions. A human being can display a wide range of emotion through various means, including facial expression, speech, actions, and written text. Most of the work here is about two concepts: written text and speech. Computers, tablets, and smartphones are now commonly used to access the internet. Textual data is generated in large quantities due to this process. Manually analysing all the data for a specific purpose is now impossibility. The development of new research directions has been enabled by advancements in automatic data analysis, such as automatic emotion analysis. Researchers have paid attention to the use of emotion analysis because of its application in various fields. A simple example of this concept is that security agencies can monitor emails, messages, and blogs to identify suspicious activities. Emotions can be any strong feelings related to a particular situation, a particular mood, or a particular relationship. Through text, feelings, and speech, exchanging emotion can be done. Although humans are capable of identifying their feelings and emotions, this is still a challenge because computers are not capable of identifying human feelings in written form. Now here, the role of human computer interaction in digitalization is crucial.

The problem now is that we have so much data available via the internet that it is our job to turn that data into digital form and to find feelings. A feeling can be expressed in as few or as many words as necessary. Emotion is Social Physiology: A book with six Ekman emotions—happiness, anger, fear, happiness, surprise, and fear—is titled "Emotion is Social Physiology." It has additional feelings that can be classified as secondary and subject-related. At sentence level, we will look for emotions in text. When you're reading, you can track the writer's feelings by looking for clues in the text. To respond to “Are you happy?” you can use a positive response that conveys positive feelings. The concept could be described as frustrated, sad, or angry if “the person is not happy.” So, from the text, the user's emotional state can be deduced. There are various applications like when an employee writes an angry email to a colleague, he will see the point of the email and protect his job that way. It's also important for the marketer to be aware of the emotions that their customers are feeling so that they can provide better relationship management, product service, and product delivery strategies for their customers. While psychologists also can benefit from being able to guess people's emotions based on the writing they produce which can be used to predict their mental state, psychologists can also take advantage of knowing other people's emotions from what they write.

II. PROBLEM DEFINITION AND EXISTING SYSTEM

Content-based classification in text documents revolves around concepts from both Natural Language Processing (NLP) and Machine Learning. This paper discusses textual data and the techniques used in emotion detection, as well as their effect on emotion recognition. We can identify and summarise the issues by posing different questions.

Collection of Data:

Which features should be extracted from the data? And how do you go about dealing with the constant shifts in the types of words we use in our daily conversations?

ISSN No:-2456-2165

Features Choices:

How many different kinds of emotion signs can be found in a speech? What information can be derived from contextual data? In order to get a good result, how can these features be combined? Firms are using emotion detection technology to improve customer service, conduct interviews, and better target advertising for their customers. However, researchers in the field have warned that some software may not always be trustworthy because of out-dated psychological theories that are used.

It is the most straightforward to use keyword-based emotion detection. The goal is to identify emotion-related patterns, and then match them. Sentiment analysis focuses on identifying whether a subjective expression is positive, negative, or neutral and then classifying documents based on their objectivity or subjectivity.

III. PROPOSED SYSTEM

Based on facial expression, there are 6 basic emotions that are broadly applied to describe humans: anger, disgust, fear, happiness, sadness, and surprise. These are generally related to feelings of anxiety, particularly “Surprise,” which can be linked to either positive or negative emotions. Interestingly, it has recently been determined that the number of basic human emotions has been “reduced” to four: happiness, sadness, fear or surprise, and anger or disgust. Many people are surprised to learn that we only have four basic emotional states. To make things simpler, we will use the widely used 6 emotions instead. Still, it remains unclear how much emotion we can get across with text. This is especially interesting since the expression on your face and the way you say things communicate about 70% of the emotions that you intend to convey in speech. An inherent characteristic of any kind of recognition task is that there are three major approaches, one of which is rule-based, the other being statistical, and the third being a hybrid that relies on factors such as the amount of data available, domain expertise, and domain specificity. Lexicon-based methods, machine learning, or a concept-level approach are useful approaches for sentiment analysis. Today, we will be looking into the many ways in which we can do this. We will use machine learning in particular, using the deep learning method.

Algorithms: SVM

A common approach to supervised machine learning in this field is via support vector machines (SVMs), also known as support vector networks. An SVM is a discriminative classifier defined by a hyperplane that splits the class into two sections. Supervised learning yields an optimal hyperplane that classifies new examples.

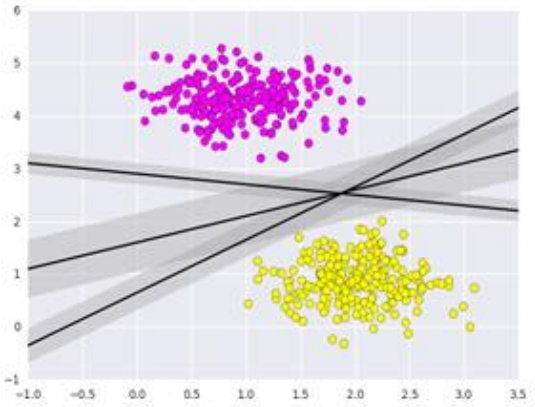

Fig 1: SVM (a)

What Support Vector Machines do is consider a region around the line separating two classes, also referred to as a "bounded search space".

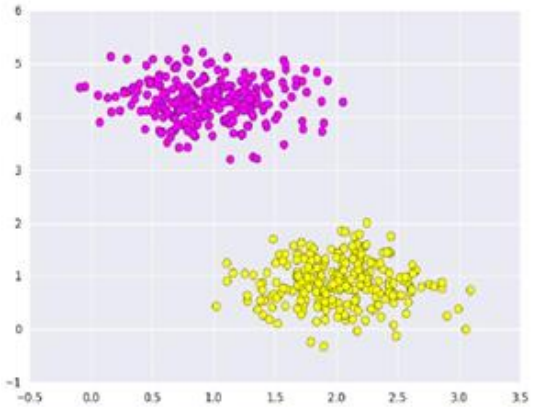

Fig 2: SVM (b)

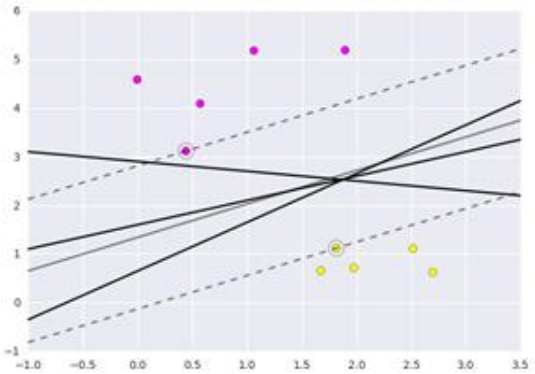

Fig .3: SVM (c)

This is the intuition of support vector machines, which minimises the perpendicular distance between the two datasets in order to get the most accurate linear discriminant model. Finally, let's use our training data to train the classifier. It is necessary to first import cancer datasets as csv files so that we have two distinct features to train on. This next task is to use a Support Vector Machine (SVM) to assign a class label to these locations. while the math involved in the likelihood model is fascinating, we will let someone else describe the math elsewhere. We are going to

ISSN No:-2456-2165

treat the scikit-learn algorithm as a black box and simply implement the above procedure inside it.

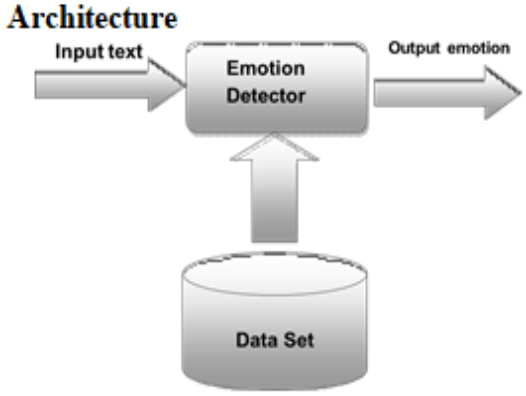

Fig 4: Architecture diagram

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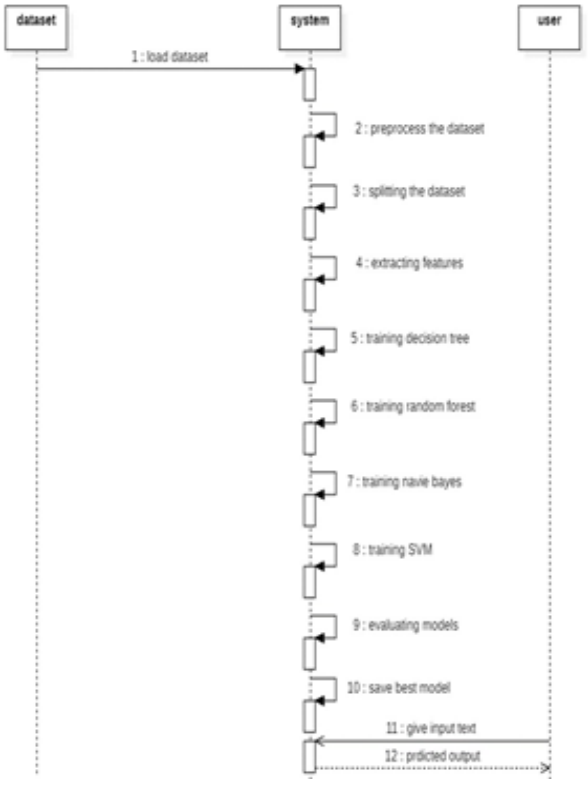

Fig 5: Sequence Diagram

UML also uses activity diagrams, which are helpful for documenting dynamic aspects of the system. A simple flowchart that is commonly referred to as an activity diagram can be defined as a flowchart used to represent the flow form one activity to another. The operation of the system can be referred to as this activity. The control flow is constructed in one operation and passes from one operation to another. Flow can be sequential, branched, or concurrent. Flow control is handled by using various elements like forks, joins, and the likes in an activity diagram. A particular operation of the system is called activity.

We use NLTK tools to implement this project. The project is implemented through a step-by-step process, which starts by cleaning the given text. To reach a successful system, implementation is critical, and users' confidence in the new system is essential. The modification of the application was implemented so that it could be used in place of an existing application. Conversations of this type are manageable if no major changes are implemented. Each programme is tested individually during development, and the program's data is verified to ensure that the linked programme works correctly in combination with the computer system and the user's environment. The system has been established, and users have found it suitable. And thus, the system will be put into place shortly. Included in the simple operating procedure is a feature that aids the user in quickly understanding how the different functions work. The executable version of the application will be developed and loaded on the central machine shared by all users and a network connection will be established. Finally, the system must be documented from beginning to end so that all components and procedures can be found.

Technologies Used

Python is a general-purpose, interpreted, interactive, and object-oriented programming language. Python was created to be readable for human beings. English keywords are frequently used whereas punctuation is used in other languages, and English does not have the same number of syntactic constructions as other languages.

Testing is the process of determining whether a system or its components meet a requirement by applying them and evaluating the results. In contrast to the actual requirements, testing is used to identify any gaps, errors, or missing requirements.

Table 1: Test Case

S.no	Input	Expected output	Actual output	Status
1	I passed exam which I had to repeat	Joy	Joy	Pass
2	When one lets friends down	Guilty	Guilty	Pass
3	I saw a cockroach in kitchen	Disgust	Disgust	Pass
4	I hear sounds at night	Fear	Fear	Pass
5	Hello!!	Joy	Fear	Failed
6	How dare you to take my chocolate	Anger	Shame	Failed

IV. RESULTS

Fig 6: Home page

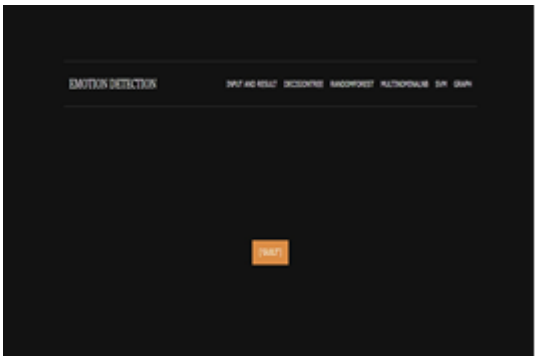

Fig 7: Input and Result

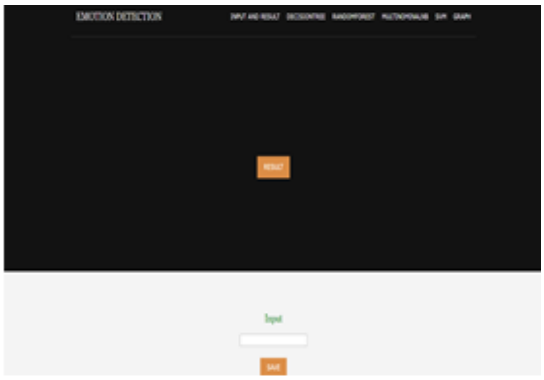

Fig 8: Input

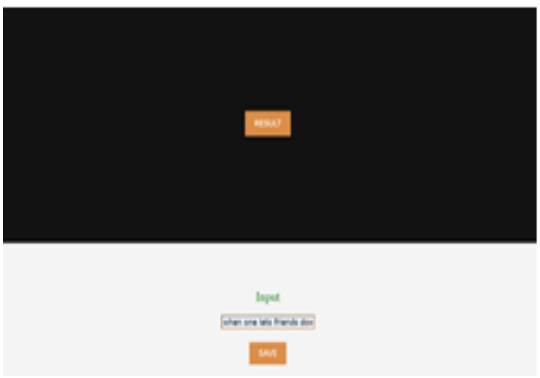

Fig 9: Result

Fig 10: Accuracy for decision tree

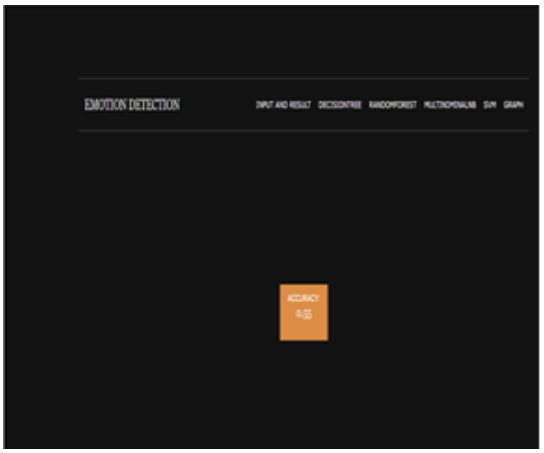

Fig 11: Accuracy for random forest

Fig 12: Accuracy for multinominal navie bayes

Fig 13: Accuracy for svm

ISSN No:-2456-2165

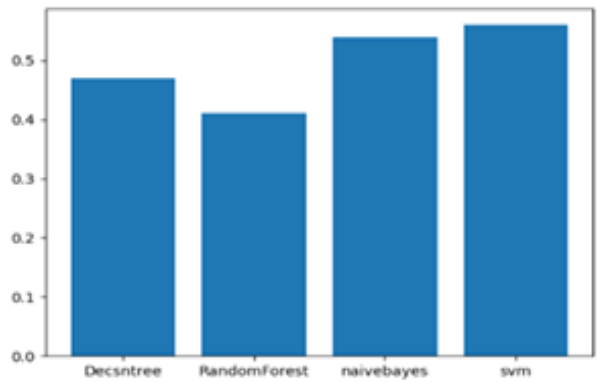

Fig 14: Graph

V. CONCLUSION

Our project involved presenting different methods for text-based emotion classifications. Additionally, our system incorporates the surrounding words, and then depicts the results. Additionally, it incorporates user data with historical data to understand users' experiences. The future is anticipated to include enhancing the textual emotional deduction modality's efficiency to the existing system. In addition, to increase the intensity of other emotions we haven't used in this paper, Other than feature extraction techniques, the most effective classifiers may benefit from feature enhancement.

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