BDI using NLP for Efficient Depression Identification

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Abstract —
This study aimed to assess the prevalence and nature of mental disorders by attending the physicians. Mental disorder leads to difficulties in educational, social, occupational fileds. Failure to detect mental disorder denies patients give proper treatment. So the main aim of our projects is to analyses the symptoms of individuals and applies each permutation to the situation to detect the disordered person. In our project, the input will be given in the form of speech. The speech will be converted to text using Google API. Then by applying NLP to text, sentiment analysis will do using BDI questions from the person will be asked. The result generated will be stored. From that response find out that the person is normal or in depressed state. If the result generated are negative that is the person is found in depresses state, then we will suggest that person some measures to come out that state. The measure suggested can be like visiting a physician, doing exercise or doing things of interest.

Key Words:Beck Depression Inventory (BDI), Natural Language Processing(NLP), Depression, Machine Learning.

I. INTRODUCTION

Depression is a common mood disorder that affects individual oprating across different domains. It is currently known that more than million people suffer from depression worldwide and that it significantly contributes to the global burden of disease. Depression stands out not only for its high pervasiveness, but also due to the probability of associated relapse and recurrence. Another setback is the high financial cost that it involves, which translates into low productivity, workplace absenteeism, outpatient care, hospitalizations and pharmacological treatments. The Beck Depression Inventory is a Twentyone question multiple choice self report inventory, one of the most widely used assymetric tests for measuring the severity of depression. Beck Depression Inventory has become one of the most widely used measures to assess depressive symptoms and their severity. In our project, the input will be given in the form of speech. The speech will be converted to text using Google API. Then by applying NLP to text, sentiment analysis will do using BDI questions from the person will be asked. The result generated will be stored. From that feedback whether the person is normal or in depressed state is find out. If the result generated are negative that is the person is found in depresses state, then we will suggest that person some measures to come out that state. The measure suggested can be like visiting a physician, doing exercise or doing things of interest.

A. Natural Language Processing (NLP)

Natural language processing (NLP) is a sublet of computer science, information engineering, and artificial intelligence concerned with the interactions between computers and human (natural) languages, in particular how to program computers to process and observe large amounts of natural language data. NLP is a way for computers to observe, figreout , and derive meaning from human language in a smart and useful way. By handle NLP, developers can standerdize and formation knowledge to perform tasks such as automatic summarization, translation, sentiment analysis, speech recognition, and topic segmentation.NLP is used to observee text, allowing machines to understand how human's speak. This human-computer communicaton enables real-world applications like automatic text representation, sentiment analysis
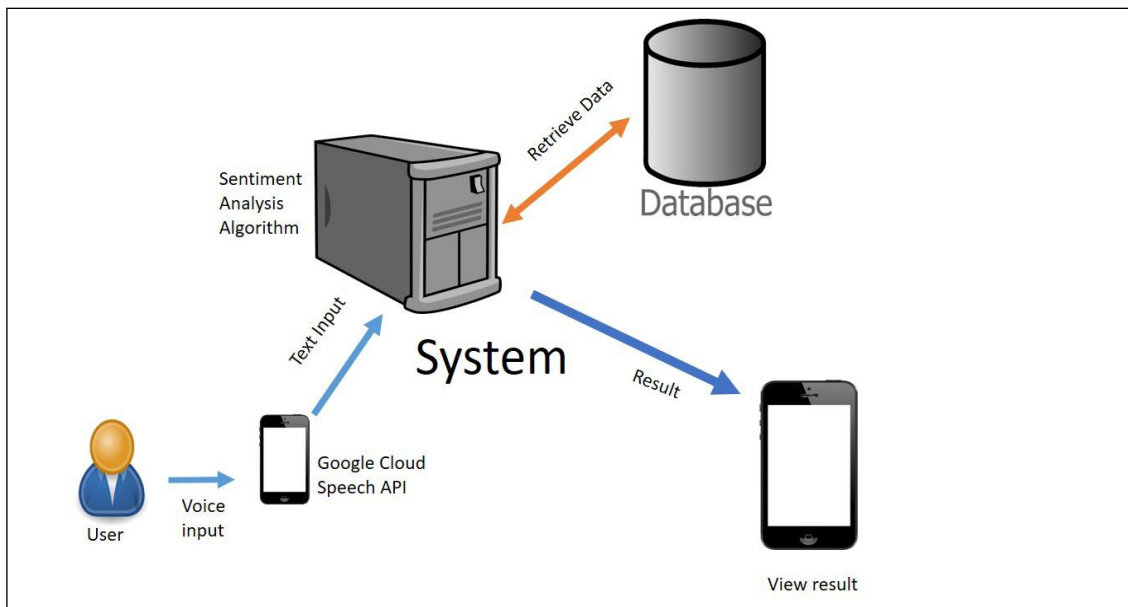
B. Beck Depression Inventory(BDI)

The Beck Depression Inventory (BDI) is one of the most world-widely used tools for depression screening and assessment.Depression is the leading cause of disability. This inventory is a self-report questionnaire consisting of 21 items, each of which could be scored from 0 to 3 in terms of intensity. Since the BDI was first described by Beck et al.Emotion can be expressed as fear,happiness, anger, disgust,sadness, surprise and so forth. While board topic of sentiment has been studied in psychology for decades, very little effort has been spent on attempting to detect emotion

from text. In this section, we assume that emotion reaction of an input sentence is essentially represented by its word appearance.

II. PROPOSED SYSTEM

In proposed system the user will give the answer of question in the form of speech. Thisspeech is converted into text using Google API. Then by applying NLP to text, sentimentanalysis will do using BDI questions. The question is present on system the person answerthat question this answer is store in the system. Using Google API this speech is convertedinto text. According that answer the person is in depression or normal state is show.

III. ARCHITECTURE DIAGRAM

IV. ALGORITHM

Input Sentence(input text)
Output Emotion(positive=1.negative=-1,neutral=0)
- Step 1: For each token in the document.
- Step 2: Check If (word is present in the list) Then Retrieve polarity (POL) and go to Step 4
- Step 3: If (no polarity assigned to word) Then fetch next token and go to Step 2
- Step 4: word POL= (POL); End For Loop and go to Step 6 when all tokens are processed.
- Stpe 5: Adding the polarities values of the entire tokens.
- Stpe 6: If (doc POL is less than zero) Then label the document as negative
  Else If (doc POL is greater than zero) Then label the document as positive Else classify the document as neutral
- Stpe 7: stop

V. MOTIVATION

Psychological Disorder Detection is useful for finding the depression of the people for that perpose we used BDI question but this BDI question is in the form of multiple choice. Now we are developing the system in that user can answer his own answer.

VI. SCOPE

In future we will try to increase the resources of our a_ect lexicon and emotional datasetto increase the performance of our methods as well as to increase the accuracy of the entiresystem. There are many advantages in being able to recognize emotion from text input. Tobeing able to assemble such kind of applications, the ability to detect emotion from text canenhance the human-computer interaction. If the computer can tell a person as mood oremotional state, it would be able to switch to an accommodating form of interaction.
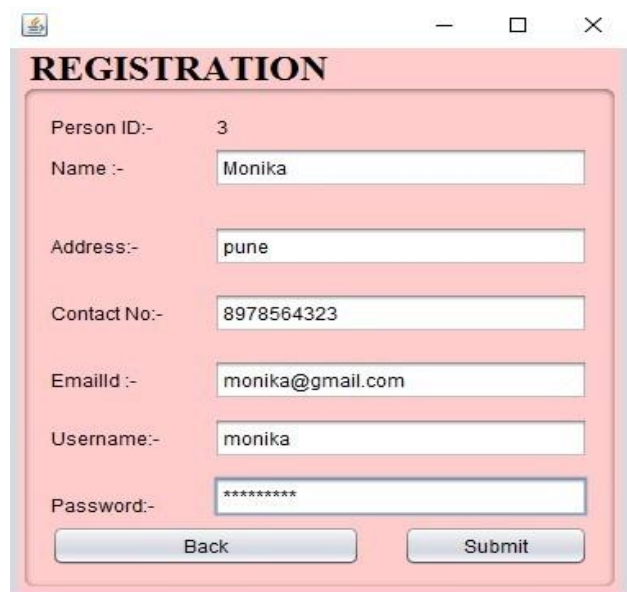
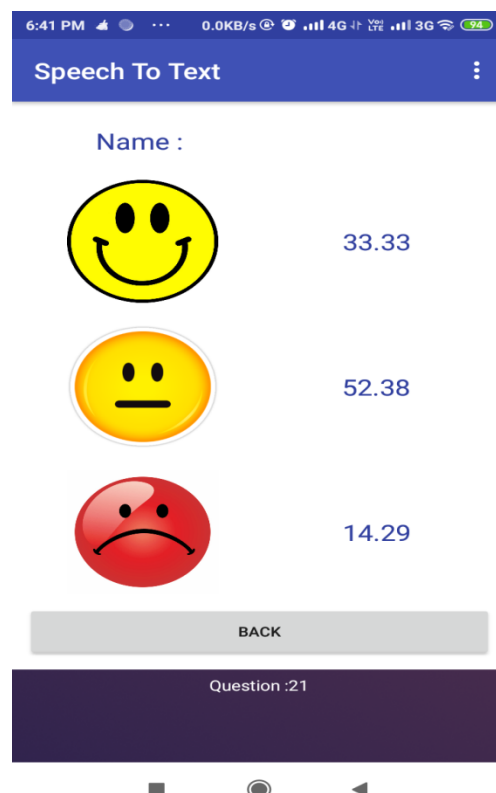**VII. Screen Shots**

A. Login Page

B. Registration Page

C. Result

Thus we have tested our project on 10 to 12 peoples. The project accuracy is 60%.

VIII. CONCLUSION

In our proposition, we propose three emotion identification methods to extract emotion from text input. Experiments proved that human motion was deeply depended on the content word of the sentence. As we know that, it is still difficult to do the semantic parsing with machine learning method. Nevertheless, some part of the semantic information and emotional keywords such as exclamatory keywords & direct emotional keywords has been work out of in the system. The output shows that we have got relatively good results for emotion detection from text input.

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