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Detecting Emotion from Text and Emoticon

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ABSTRACT

Emotion detection from text and emoticon is related to the field of NLP (natural language processing). To detect emotion from text and emoticon, here we proposed some methodology. These methodologies solve the problem of detecting the emotion in the case of sentence level and emoticon. Our created method works based on keyword analysis (KA), keyword negation analysis (KNA), a set of proverbs, emoticon, short form of words, exclamatory word and so on. To find emotion we created 25 emotion classes. This analysis should generate a better result for detecting emotion from the text and emoticon. Our method should give 80% accuracy.

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Classification: H.5.2
Language: English

London Journals Press

LJP Copyright ID: 322983
Print ISSN: 2514-863X
Online ISSN: 2514-8648

London Journal of Research in Computer Science and Technology

Volume 17 | Issue 3 | Compilation 1.0

Detecting Emotion from Text and Emoticon

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I. ABSTRACT

Emotion detection from text and emoticon is related to the field of NLP (natural language processing). To detect emotion from text and emoticon, here we proposed some methodology. These methodologies solve the problem of detecting the emotion in the case of sentence level and emoticon. Our created method works based on keyword analysis (KA), keyword negation analysis (KNA), a set of proverbs, emoticon, a short form of words, exclamatory word and so on. To find emotion we created 25 emotion classes. This analysis should generate a better result for detecting emotion from the text and emoticon. Our method should give 80% accuracy.

Keywords: emotion class, emotion database, proverbs, emoticon, human-computer interaction.

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II. INTRODUCTION

Emotions are one kind of influence that is mainly generated by human thinking and internal activity [1]. It is also one kind of human nature [2]. Detecting emotions from text play a vital role in a human-computer interaction [3]. Emotions can help for making a decision and also process cognitive relationship [13].

Mainly emotions are split into two kinds, i.e. positive emotions and negative emotions. Positive emotions are interest, laughter, happiness etc. Negative emotions are fear, anger, sadness and so on [13]. There are different ways to find emotion such as image, speech, facial expressions, textual data, emoticons etc. Among all types of approaches, textual data is important for researchers. Here, mainly we have discussed text analysis and emotion.

III. RELATED WORK

Shiv N. et.al [1] described emotion detection from textual documents and blogs. They proposed two components: Emotion Detector, Emotion Ontology for finding emotion from the text.

Nadia A.et.al [5] proposed a framework that analyses text from emotion. Here they also worked with an emoticon. For finding emotion, they used DW(Data Warehouse) technique.

Abdul Hannan [2] detected emotion from text using NLP (natural language processing).Here he described mainly two kinds of NLP methods .i.e. keywords or pattern matching technique and parsing technique.

Shadi S.et.al [17] describes emotion detection from text generated automatically rules. These rules are called emotion-recognition rule (ERR). These ERR extracts from a lot of training set. This training set classified by K-nearest neighbours (KNN), PMI (Mutual point information).

IV. METHODOLOGY

To determine emotion from the text, we propose some method based on keyword class. These keywords class contains similar types of keywords, emoticon, proverbs, short from an exclamatory sentence.

Determine keyword class:

Emotion classes are determined by Basic emotions model (Ekman, Izard, Plutchik) and

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different psychological matter. Emotion class related keywords can be found from antonym and synonym.

4.1 Proverb match

In the proverb match method, we have fixed emotion class for proverbs based on sentence meaning of proverbs. At the last step, if proverb sentences exist then they give emotion. On the other hand, the emotion is not existed then goes to keyword class-based method for finding emotion.

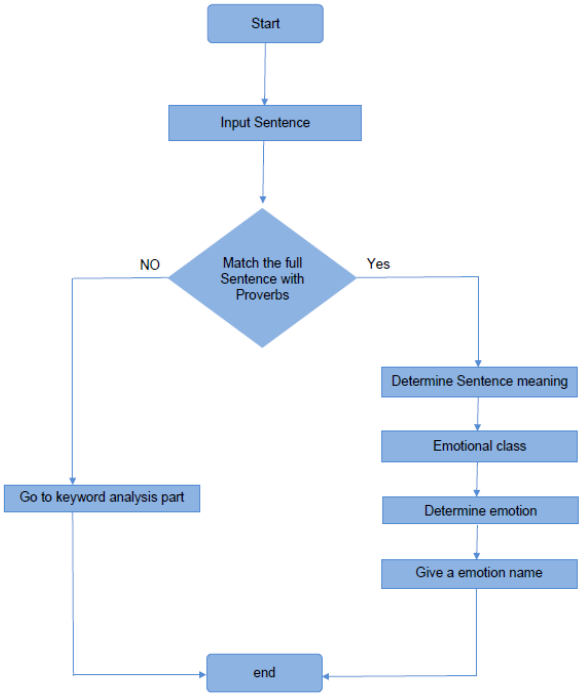

Figure 1: Flowchart for detecting emotion from Proverbs

4.2 Keyword class-based method

In this method, we first took input sentence as input and the output is a name of emotion. The first step of this method is checking related keyword from the emotional database. If no related keywords found, it gave a simple message. On the other hand, if related keywords found then next step is negation check. At the last stage of all them go to the emotion class and give expected emotion.

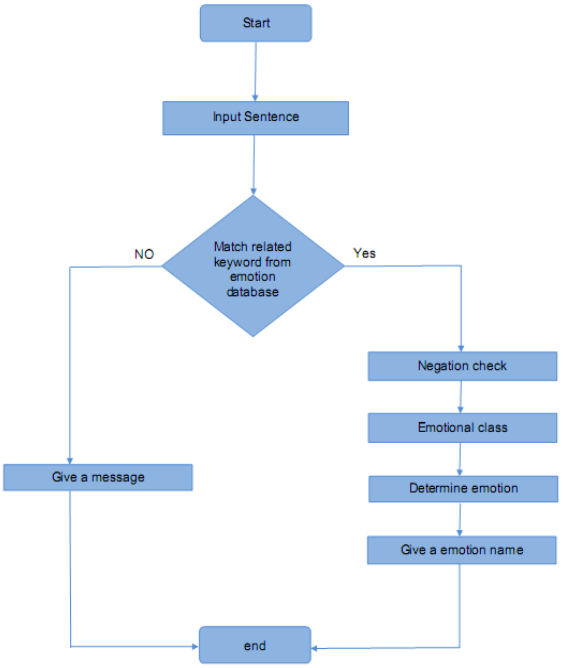

Figure 2: Flowchart for finding emotion from keyword analysis

4.3 Emoticon and short tokenisation method

In the modern world, emoticon and short of play a vital role in expressing emotion in human language. Short form and emoticon are the shortest forms of expressing emotion. Here we mainly tokenize the word and spotting that it is short form or emoticon. After spotting that, it gives a suitable emotion class name.

We mainly collected these emoticons and short forms from different social media (Facebook, Twitter etc.)

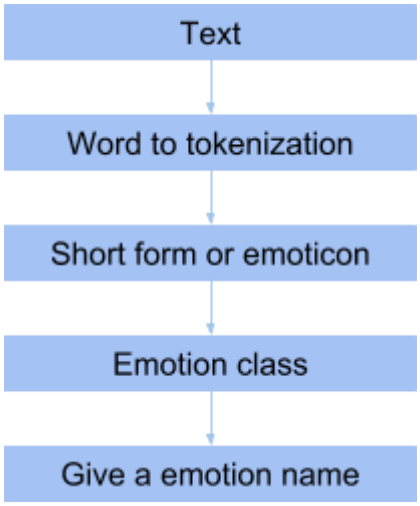

Figure 3: Short Form or emoticon spotting technique

For finding emotion class, we have created almost 25 emotion class and 460 keywords that are related to emotion class. Moreover, we have also created emotion class for proverbs using sentence meaning, short form, emoticon, and exclamatory sentence related to emotion class. In below we are giving some examples.

Table 1: Some examples of emotion class and related keyword

Emotion Class	Related Keywords
Happy	Joyous, great, happiness, good, glad
Angry	Wild, furious, bad, hot, stormy
Sad	Sorry, tragic, depressed, unhappy, pensive
Disgust	Disturbed, annoying, suck, repel, offended
Excited	Amazement, wonder, astonished, surprise.
Helpless	Incapable, powerless, vulnerable
Confident	Captivated, attached, loving
Good	Peace, comfort

Negation checking keywords:

Rarely, seldom, not, nor, can't, isn't, aren't, never, none etc. these type of 100 keywords are in my keywords database.

Table 2: Some examples of emotion class and related Proverbs

Emotion Class	Related Proverbs
Sad	Day of sorrow is longer than a month of joy; a constant guest is never welcome
Hurt	A burnt child dreads the fire
Angry	Hit the ceiling
Fear	Shaking like a leaf
Jealous	On pins and Needles
Advice	Cut your coat according to your cloth.

Table 3: Some examples of emotion and related short from

Emotion Class	Short from
Sad	H8, is, plz, pls
Hurt	Ih8u
Happy	A lot, f9, yd
Angry	O&o, onna
confused	U2?
Advice	TC, g4u

Table 4: Some examples of emotion and related Emoticon

Emotion Class	Emoticon
Sad	:-(
Happy	;-D
Angry	:-E
Excited	^-^
Depressed	=p,:-p

Table 5: Some examples of emotion and related exclamatory sentence

Emotion	Related exclamatory keyword
Sad	Alas, oww
Excited	Boo, wow
Happy	Yahoo, hurrah, yay
Fear	Aah
Angry	Grrr

V. PERFORMANCE RESULTS

We analysed many kinds of sentences for finding emotion from the text. For different kinds of sentences, we got a different kind of success rate based on our proposed methodologies. In case of calculating success rate, we have used the equation given below. We multiplied with hundred for finding percentage calculation:

$$\text{Success rate} = \frac{\text{Number of correct sentence} * 100}{\text{Number of sentences given}}$$

Table 6: Success rate finding

Number of Sentences	Number of Correct sentences	Success rate (%)
120	82	68
120	100	83
120	72	60
120	103	86
120	104	87

For understanding the relationship among the number of the input sentence, a number of the correct sentences given emotion and success rate, we have given a graphical representation below. We find almost 80% correct output using all of our methodologies.

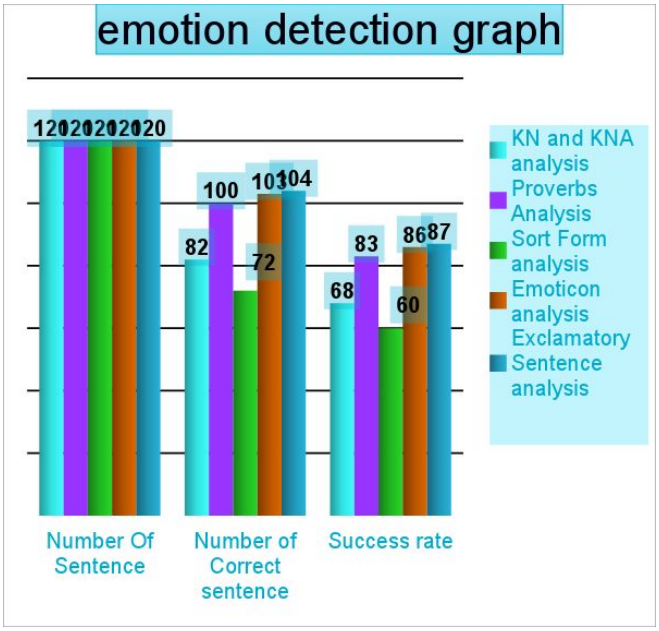

Figure 4: Graph for showing relationship among number of the input sentence, number of the correct sentences given emotion and success rate(%).

VI. CONCLUSION AND FUTURE WORK

Detecting emotion is a vital field in case of human-computer interaction. In this paper, we proposed some methodologies to find emotion from text based on keyword class, negation checking, proverbs and so on. These methodologies work based on sentence level and emoticon. In future, we want to work with paragraph level and want to find a different methodology for solving this issue.

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