An approach to form emotion based chatbot

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Abstract: *Chatter Bot is human chat simulation. It is software application which behave like human. Its Mimic Human chat simulation. The term "ChatterBot" was originally coined by Michael Maudlin in 1994. Today. In most cases, chatbots use messenger apps to communicate with customers. In this paper I am finiding possibility of includign emmotion. We can quntify basic emmtion with number. By implementing sentimental analysis we can mesure users emmotion, and as per user's emmotion our system will reply. This paper not only mesure sentiment of person but chat bot is replying as per its own sentiments, where person can have emmotion based chat.*

Key Words: *KNN, emotion based chat robot, chatbot, Plutchik, Plutchik-wheel.*

1. INTRODUCTION:

Emotion is any conscious experience characterized by intense mental activity and a certain degree of pleasure or displeasure; it can also be defined as a positive or negative experience that is associated with a particular pattern of physiological activity. [7] Emotions are again play an important role to express our thoughts. Without emotion any communication is not consider as complete. Now a day's computer words goal is human computing interface (HCI) to make more adaptive and interactive. We are trying to achieve this goal by gesture recognition, facial recognition, eye tracking, speech reorganization, Chatbot, here in this paper new hypothetical concept adding emotion during automated Chatbot, here I am measuring the possibility of implementing emotion during human-machine chat. Again, it is very difficult to measure the emotion using words. Here I have taken stand with Robert Plutchik [1] with basic 6 emotions which going to coding based on 0 to 100 ranks, mixture of that basic emotion will create new emotion. basic emotion describes by Robert Plutchik [1] in Plutchik-wheel.

2. THEORY OF EMOTION:

Robert Plutchik (21 October 1927 – 29 April 2006) was professor at the Albert Einstein College of Medicine given Psycho evolutionary theory of emotion and classification emotional responses. He also introduced wheel of immolation fig 1.

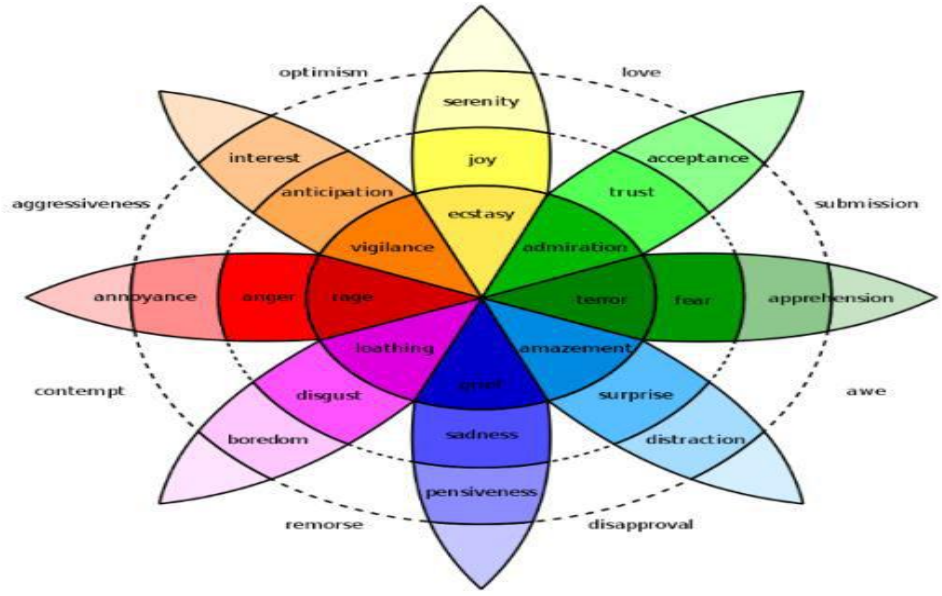

Figure 1: Plutchik wheel

Plutchik's psycho evolutionary theory of basic emotions has ten postulates.

- The concept of emotion is applicable to all evolutionary levels and applies to all animals including humans.
- Emotions have an evolutionary history and have evolved various forms of expression in different species.
- Emotions served an adaptive role in helping organisms deal with key survival issues posed by the environment.
- Despite different forms of expression of emotions in different species, there are certain common elements, or prototype patterns, that can be identified.
- There is a small number of basic, primary, or prototype emotions.
- All other emotions are mixed or derivative states; that is, they occur as combinations, mixtures, or compounds of the primary emotions.
- Primary emotions are hypothetical constructs or idealized states whose properties and characteristics can only be inferred from various kinds of evidence.
- Primary emotions can be conceptualized in terms of pairs of polar opposites.
- All emotions vary in their degree of similarity to one another.
- Each emotion can exist in varying degrees of intensity or levels of arousal.[2]

3. MEASURING EMOTION:

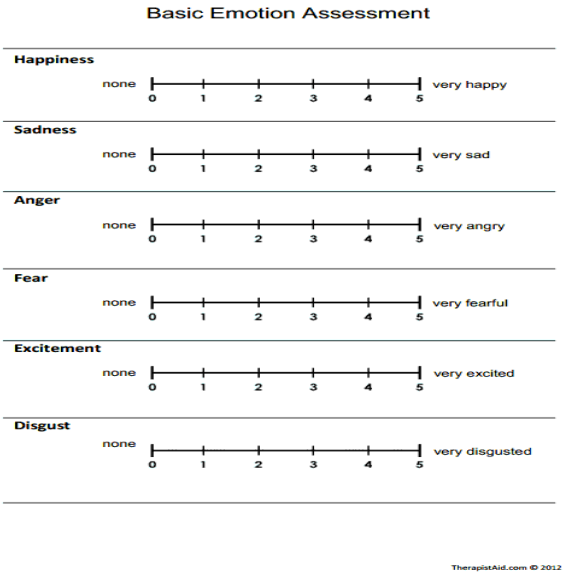

Figure 2: Measuring emotion

It can be find measure of Basic Emotion Assessment during every therapy session as given in chart. So here I can represent emotion from 0 to 100.

If I consider Plutchik's basic emotion then we can convert it into integer variable rating from 0 to 100. Here we are 0 means none and 100 define 100% saturation of the given emotion.

4. ASSUMPTIONS:

Here, I am assuming that emotion can be measured with text and worlds only. Because in chat system I am not able to measure facial and body gesture. Which is also affect the generate emotion in Chatbot.

As every new born baby has some basic default emotion. Like one baby have value of angry 60 I can have called them and short tempered. And another baby may have born with angry 40 having less aggressive. During the booting this system will assign some default value.

This paper shows only one parameter that is emotion(emmo). But we can enhance this idea to the multi emotions as given in Plutchik's basic emotion.

5. EXPERIMENTAL SETUP:

For the experimental setup, I am using AIML Parser ref[8] python and NAÏVE bayes ref[9], KNN Library ref[10].

Proposed Algorithm

Step [1]: [init]
- ➔ Set emmo = rand(20,80);
- ➔ Set saturation = rand(emmo+1,100)
- ➔ Init AIML Parser

Step [2]: [Chat Reply]
- ➔ Userquery = readUserText()
- ➔ emmoValue = naiveBayes(Userquery)
- ➔ ListReply=AIMLParser.getreply(userQuery)
- ➔ Step [3]
- ➔ For each LR in ListReply
  - o emmoValue = Calculate emotion(LR)
  - o Store: [LR, emmoValue]
- ➔ Find (KNN) Nearest EmotionValue(emmo) and return reply.
- ➔ emmo = emmo+ emmoValue
- ➔ Goto Step [2]

Step [3]: [Validation]
- ➔ If emmo >= saturation or emmo <=0 then
  - o Disconnect chat
    Else
  - o Continue

6. LIMITATION:

This chat (text) based emotion chat so false emotion cannot be measured. Facial expression or body language of another person again can't be measure.

7. CONCLUSION:

This paper represents the idea of calculating emotion for one variable only. This can be extended using multiple emotional values like love, hate, anger and more. This paper also based on bag of Word format which is again not good to achieve emotion like human have

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