Advancement of AI Chatbots Using Emotional Intelligence

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Abstract- *A chatterbot or chatbot aims to make a conversation between both human and machine. It can take user input in many formats like text, voice, sentiments, etc. and returns most appropriate response for the users's request.You must have used conversational chatbots either in any application or in any website. Conversational chatbots have ability to chat with any human simply by asking questions and sending required answers to user as per knowledged database it uses. But this type of chatbots usually lack to understand what is the current mood of user while chating, and what should i respond to user as per their emotional level. Emotion AI in chatbots is about speech and text detection and also idea of understanding human emotions. When Emotion AI chatbot hears you speak or a text what you typed, it can extract important features and aim to understand your message. Basically, we will look forward to understand importance of emotional level chatbots. Chatbots with emotions can detect user's emotions and able to label them as a specific feeling- for example, excitement. This paper talks about developing smart bots using Artificial Intelligence that can respond at the human emotional level.*

Keywords- Emotional Chatbots, AI Chatbots with Emotional Intelligence, Building chatbots with Emotions, Intelligent Chatbots.

I. INTRODUCTION

What exactly is a chaterbot? - A chatbot is an Artificial Intelligence (AI) software that can simulate a conversation (or a chat) with a user in natural language through messaging applications, websites, mobile apps etc.
They can be of two types:

1. Command Based: - Basically function on predefined rules and can answer to only limited questions. User need to select an option to determine their next step.

2. Intelligent/AI Chatbots: Uses Machine learning and Natural Language Processing to understand user's language.

Why Chatbots are important? -

1. They Interacts between human and machine.
2. Gives Enhanced customer experience.
3. They Improves customer engagement.
4. Chatbots Reduces typical cost of customer service.

In above mentioned chatbot types we will talk about AI Chatbots or Intelligent Chatbots with enhanced feature as they can understand human emotions while having conversation with humans.

II. EXISTING SYSTEMS

1. Existing systems uses command based chatbot. For eg. Customer Service, Website Help, Education etc.
2. These systems allows communication between humans and machines using Human Computer Interaction(HCL) technology.
3. Customer Service processes are automated as the chatbot can answer questions about product and services.
4. In some machines, there are chatbots present who answers to questions only based on knowledge from database.

III. PROBLEM STATEMENT

Chatbots work great for simple or transactional requests because they remove the boundaries of different apps and websites. But with chatbots, what we gain in convenience, we lose in emotion, especially in a time where expressive communication is more important than ever.

1. One issue with the simple conversational chatbot is they feel too unnatural for some consumers. Some people would still rather talk to real-life sales representatives because they feel it would be unable to response their questions properly.

2. Misinterpretation of messages : It isn't always easy for chatbots to decode the user's input behind their messages and questions.
3. Fixed type of chatbots are usually use to solve repetitive questions of customers.
4. They cannot understand human emotions and behaviour.

IV. PROPOSED SOLUTION

- The chatbots in proposed system are actually Chatbot which can recognize human emotions and sentiments.
- These Emotional Chatbots are based on Artificial Intelligence (AI) and uses Natural Language Processing (NLP).
- NLTK (Natural Language Toolkit) use for building programs to work with human language.

Features of AI and NLP Chatbots:

- Respond accurately to most user inputs.
- Ability to be prepared for anything.
- Can collect information for analysis and future use.
- They have sense of emotional intelligence. It will make them look more like human.
- Better able to detect the intent behind uses messages.

How Emotional Chatbots works:

- At First, They do an analysis of a conversation with a human occurs to detect the sentiment.
- Next, the chatbot uses that information to come up with a relevant answer that's also emotionally appropriate.

Major roles played by emotional chatbots:

- They can deal with anger and impatience of human.
- Dealing with disappointment and Frustration. - Chatbot can turn complaints into compliments by sympathizing with them and reassuring them that a solution will be found.
- Dealing with Surprise , Happiness and Gratitude- If the conversation results in positivity, they can adapt their mindset to shift to a more conversational tone, smiling or joking to further earn the trust of the customer.

Emotion Sensing and Emotion Synthesis

1. Voice : Verbal, vocal and facial clues can be use in AI chatbots. Emotions like anger and sadness could more easily be detected using voice.

2. Facial cues, body gestures and movements also convey affective information. This can enable real time analysis from a live camera feed.

3. Emotion synthesis : Vocal intensity increases for anger and decreases for sadness. Speech rate is faster for anger, happiness and fear than for sadness.

Solution:

1. Speech Synthesis Markup Language (SSML) is a XML based markup language for speech synthesis. Using SSML tags we can customize the pitch, speaking rate, volume of text, pausing, specify pronunciations and remove emphasis for natural sound speech.

SSML tags can either set a positive, regretful or neutral tone for the generated audio by setting the "express-as" tag with the expected expression.
<express-as type="GoodNews"> Congratulations on your wedding! </express-as>

2. We can detect presence of a human face in live stream video for detecting facial expression:

We can take snap of image from live stream video and pass this image to Emotion API and get emotion data for this image.

V. CONCLUSION

- Emotion AI Chatbots becomes more human like.
- AI chatbots with emotion sensing can be capable of delivering a personalized Experience.
- These chatbots can provide best customer service.
- Chatbots able to improve themselves by learning over time.
- Best part is with AI emotional chatbots is we can combine multiple apps into one.
- They can be Available for 24/7 hours.

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