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DEPRESSION CHATBOT USING DEEP LEARNING

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ABSTRACT

This paper is created to offer some relief sorrow. Chatbots are specialists which are utilized to handle a particular assignment, and it tends to be utilized to present an item to a client or take care of relative issues related with an item, in this manner saving HR. The review which is presenting a chatbot to the society which will assist with decreasing the number of discouragement survivors. Through this review work, RNN LSTM encoder decoder model is trying to utilized to know the client's passionate state and as indicated by that chatbot gives the best reaction. We have proposed a multireason discourse model which can be utilized in day by

day correspondence rather than for explicit errands. It helps those individuals who are experiencing melancholy and have dread of sharing their sentiments or dread of being judged.

1. INTRODUCTION

Depression is a genuine dysfunctional behavior and it adversely influences the whole body. As indicated by the WHO overview, in excess of 300 million individuals are experiencing gloom. Depression can cause variety of daily life issues in a person's life and can kill their will and capacity to work. [3]Perhaps the most ideal method for diminishing gloom is connecting, however because of dread of being judged most victims abstain from interfacing. Henceforth chatbots came into the image, this chatbot speaks with the client and makes customized and normal discussion to the client, and furthermore offers extraordinary passionate help utilizing man-made brainpower. Essentially, the utilitarian structure of chatbots is based on the Cognitive Behavioral Therapy strategy.

CBT treatment is only making negative considerations of a client into positive. The significant part in mental wellbeing chatbots is compassionate commitment. [6]Probably the greatest test of psychological well-being care chatbots is to give protection and secrecy. Since the client's movement is totally identified with individual life hence it turns into a piece of touchy data subsequently it is important to address this issue. Along these lines, this exploration helps melancholy survivors to calm melancholy through a straightforward talking framework by offering tremendous mental help.

It carries inspiration to a discouraged individual's life. It will give a fondness to the client as a virtual amigo by making normal and human-like discussion. It will likewise propel the clients to share their issues and feelings. It answers every one of the specialized questions identified with misery furthermore, recommends ways the client can handle their tension. It indeed, even attempts to cheer the client by sending messages of trust. For therapeutic [1] of this, non profit organizations had been designed for getting techniques to counter melancholy using manner of informal association of individuals whom select bent return together and they share their problems with these organizations in the hope of getting the solution to their problems. Nowadays social distancing is mandatory due to the covid situation, and because of growing use of social media platforms had been build up to address troubles. On those platforms humans

share about their awful reviews, or their conditions in life which is causing trouble to them in life. Those platforms inspire human beings to looking for help, and raise cognizance approximately melancholy, tension, highbrow infection and suicide prevention.

2. LITERATURE SURVEY

There are many applications that are incorporating a human appearance and intending to simulate human dialog, but in most of the cases the knowledge of the conversational bot is stored in a database created by a human experts. However, very few researches have investigated the idea of creating a chat-bot with an artificial character and personality starting from web pages or plain text about a certain person. This paper describes an approach to the idea of identifying the most important facts in texts describing the life (including the personality) [2] of an historical figure for building a conversational agent that could be used in middle-school CSCL scenarios.

This paper describes a flexible method of teaching introductory artificial intelligence (AI) using a novel, Java-implemented, simple agent framework developed specifically for the purposes of this course. Although numerous agent frameworks have been proposed in the vast body of literature, none of these available frameworks[3] proved to be simple enough to be used by firstyear students of computer science. Hence, the authors set out to create a novel framework that would be suitable for the aims of the course, for the level of computing skills of the intended group of students, and for the size of this group of students. The content of the introductory AI course in question is a set of assignments that requires the students to use intelligent agents and other AI techniques to monitor, filter, and retrieve relevant information from the World Wide Web. It represents, therefore, a synthesis of the traditional objectivist approach and a real-worldoriented, constructivist approach to teaching programming to novices. The main aim of implementing such a pedagogy was to engage the students in learning to which they personally relate while attaining intellectual rigor. Classroom experience [4] indicates that students learn more effectively when the traditional objectivist approach is combined with a constructivist approach than when this orthodox approach to teaching programming to novices is used alone.

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A World Health Organization 2017 report stated that major depression affects almost 5% of the human population. Major depression is associated with impaired psychosocial functioning and reduced quality of life. Challenges such as shortage of mental health personnel, long waiting times, perceived stigma, and lower government spends pose barriers to the alleviation of mental health problems. Face-to-face psychotherapy alone provides only point-in-time support and cannot scale quickly enough to address this growing global public health challenge. Artificial intelligence (AI)-enabled[6],[7] empathetic, and evidence-driven conversational mobile app technologies could play an active role in filling this gap by increasing adoption and enabling reach. Although such a technology can help manage these barriers, they should never replace time with a health care professional for more severe mental health problems. However, app technologies could act as a supplementary or intermediate support system. Mobile mental wellbeing apps need to uphold privacy and foster both short- and long-term positive outcomes.

This is a comprehensive textbook for instructors teaching a college-level or graduate course on emotion. In this volume, the author has brought together materials that will stimulate students' interests and serve as a focus for thought-provoking discussion and learning experiences. Instructors will find stimulating on-line resources at the APA [8] Web site to enliven classroom discussion and make it easier to evaluate their students' progress. (Go to www.apa.org/books/plutchik/resources for more information.) (PsycINFO Database Record (c) 2012 APA, all rights reserved)

Personality assessment provides a description of a person's fundamental emotional needs and of the higher cognitive processes that modulate thoughts, feelings, and behavior. Prior studies by us examined personality and mood at the same time. Assessing personality may allow prediction of mood changes over time in a longitudinal study, as described in earlier prospective studies by Paula Clayton [9] and others.

Chatbots are special agents that respond with the user in natural language just as a human would reply. Specifically, social chatbots are the ones which establish a strong emotional relationship with the user. The main concept behind this chatbot was to provide mental relief to students who undergo different levels of stress and which can be the onset of an inimical depression. In this paper, we proposed an intelligent social therapeutic chatbot which distributes the text into emotion labels namely, Happy, Joy, Shame, Anger, Disgust,[7] Sadness, Guilt, and Fear. Further, based on the emotion label, it identify the users' mental state such as stressed or depressed using users' chat data. For emotion detection, we deployed three popular deep learning classifiers namely, Convolutional Neural Network (CNN), Recurrent Neural Network (CNN), and Hierarchical Attention Network (HAN). In particular, the proposed methodology of the chatbot is domain specific where through the users' interaction, the chatbot will try to prevent the pessimistic actions and rebuild more constructive thoughts.

Topic modeling is one of the most powerful techniques in text mining for data mining, latent data discovery, and finding relationships among data and text documents. Researchers have published many articles in the field of topic modeling and applied in various fields such as software engineering, political science, medical and linguistic science, etc. There are various methods for topic modelling; Latent Dirichlet Allocation (LDA) [6] is one of the most popular in this field. Researchers have proposed various models based on the LDA in topic modeling. According to previous work, this paper will be very useful and valuable for introducing LDA approaches in topic modeling. In this paper, we investigated highly scholarly articles (between 2003 to 2016) related to topic modeling based on LDA to discover the research development, current trends and intellectual structure of topic modeling. In addition, we summarize challenges and introduce famous tools and datasets in topic modeling based on LDA.

E-Learning is the fastest and inexpensive source of information today. Thousands of the people today are using electronic gadgets for accessing E-Books, Notes, News, Stocks, Entertainment and Education. E-Learning,[10] Now a day is getting popularity because of its unlimited benefits. A person, sitting anywhere around the globe can access E Resources from his home provided he doesn't have disability of any kind. Getting proper information is a difficult task and it is also a big challenge to blinds and other disabled persons [4]. So requirement of developing a Speech User Interface was felt.

3. PROBLEM STATEMENT

The Existing system is a Depression Chatbot that leverages Deep Learning techniques, specifically an RNN LSTM (Recurrent Neural Network Long Short-Term Memory) [10] encoder-decoder model. The primary goal of this chatbot is to provide support and relief to individuals experiencing depression. Here are key aspects of the existing system:

Chatbot Purpose:

The chatbot is designed to address the needs of individuals dealing with depression.

It serves as a conversational agent to assist users in expressing their emotions and seeking support.

Specialization:

The chatbot is specialized in understanding and responding to users' emotional states, particularly those associated with depression.

It aims to create a safe space for users to share their feelings without fear of judgment.

Deep Learning Model:

The core of the chatbot is an RNN LSTM encoder-decoder model.

This model is employed to analyze and understand the emotional states of users based on their input.

Multifunctional Discourse Model:

The system is not limited to specific tasks but is proposed as a multifunctional discourse model.

It can be used for daily communication, providing support beyond predefined tasks.

User Interaction:

Users interact with the chatbot by expressing their feelings and thoughts.

The chatbot processes user input using the RNN LSTM model to gauge emotional states.

User Benefits:

The chatbot aims to assist individuals who may be hesitant to share their feelings or fear being judged.

It provides a supportive environment for users dealing with depression.

Implementation Focus:

The emphasis is on utilizing deep learning techniques, specifically RNN LSTM, to enhance the chatbot's ability to understand and respond appropriately.

Deployment Status:

The abstract doesn't provide information about the deployment status of the chatbot. Specify whether the system is still in development or if it has been deployed for public use.

3.1 LIMITATIONS

Certainly, based on the information provided, here are five potential limitations of the existing Depression Chatbot using Deep Learning:

Limited Emotional Understanding:

The current system relies on the RNN LSTM model to understand users' emotional states. However, deep learning models may have limitations in accurately interpreting complex and nuanced emotions. The chatbot may struggle to comprehend subtle emotional cues or variations in user sentiment.

Dependency on Training Data:

The effectiveness of the chatbot heavily depends on the quality and diversity of the training data. If the model is not exposed to a broad range of expressions of depression and related emotions, it may struggle to generalize well to different user inputs.

Risk of Misinterpretation:

Deep learning models, including RNN LSTMs, can misinterpret user input, leading to inappropriate or insensitive responses. In a mental health context, misinterpretation could have serious consequences, causing additional distress to users rather than providing the intended support.

Lack of Personalized Intervention:

The chatbot may lack the ability to provide personalized interventions tailored to the specific needs and severity of each user's condition. Depression is a complex mental health issue, and a one-size-fits-all approach may not be sufficient for effective support.

Absence of Real-time Assessment:

The existing system may not offer real-time assessment of users' emotional states, potentially limiting its ability to respond promptly to individuals in crisis. Real-time assessment is crucial for identifying immediate support needs and ensuring timely interventions.

4. PROPOSED SYSTEM

The proposed system aims to enhance the existing Depression Chatbot by introducing advanced features and improvements. Building upon the foundation of the RNN LSTM [7] encoderdecoder model, the proposed system seeks to address the limitations identified in the current system. One key enhancement involves refining the emotional understanding of the chatbot by incorporating a more sophisticated deep learning architecture, such as a combination of attention mechanisms and sentiment analysis techniques. Additionally, efforts will be directed towards expanding and diversifying the training dataset to ensure the model's robustness across a wide range of user expressions. The proposed system will also focus on implementing a real-time assessment feature, enabling the chatbot to promptly identify and respond to users in crisis. Personalization will be a central aspect of the system, with the integration of adaptive interventions based on individual user profiles and their unique emotional needs. By iteratively refining the model through continuous learning and incorporating user feedback, the proposed system aims to offer an even more effective and empathetic tool for supporting individuals dealing with depression.

ADVANTAGES

Enhanced Emotional Understanding:

The proposed system incorporates advanced deep learning architectures, including attention mechanisms and sentiment analysis techniques. This enhancement is expected to significantly improve the chatbot's ability to understand and interpret users' emotional states, enabling more accurate and nuanced responses.

Improved Robustness through Diverse Training Data:

By expanding and diversifying the training dataset, the proposed system aims to enhance the model's robustness. Exposure to a broader range of user expressions related to depression will contribute to a more comprehensive understanding, allowing the chatbot to effectively address a variety of emotional nuances and contexts.

Real-time Crisis Identification and Response:

The integration of a real-time assessment feature is a key advantage of the proposed system. This functionality ensures prompt identification of users in crisis, enabling the chatbot to respond quickly and appropriately. This real-time responsiveness enhances the potential for timely intervention and support.

Personalized Interventions:

The proposed system emphasizes personalization by incorporating adaptive interventions based on individual user profiles. This feature aims to tailor the chatbot's responses to the specific needs and severity of each user's condition, providing a more personalized and effective support mechanism.

Iterative Learning and User Feedback Integration:

The proposed system adopts an iterative learning approach, continually refining the model based on ongoing training and incorporating user feedback. This adaptive process ensures that the chatbot evolves over time, becoming more attuned to users' needs and feedback, and thereby improving its overall effectiveness as a mental health support tool.

5. SYSTEM ARCHITECTURE



6. IMPLEMENTATION

User Input Processing Module:

This module is responsible for processing user input, which may include text messages expressing emotions, thoughts, or concerns related to depression. It involves tokenization, preprocessing, and converting the input into a format suitable for the deep learning model.

Deep Learning Model Module:

The core of the system, this module incorporates the RNN LSTM encoder-decoder model for analyzing and understanding users' emotional states. It includes the training process, fine-tuning parameters, and handling the encoding and decoding of user input to generate appropriate responses.

Real-time Assessment Module:

This module focuses on assessing users' emotional states in real-time. It involves continuously monitoring and analyzing user interactions to identify patterns indicative of distress or crisis. The

module plays a crucial role in enabling the chatbot to promptly respond to users in urgent situations.

Personalization and User Profile Module:

This module is dedicated to creating and managing user profiles. It stores information about users' preferences, historical interactions, and specific emotional triggers. The personalization module ensures that the chatbot's responses are tailored to individual users, providing a more customized and empathetic user experience.

Feedback and Iterative Learning Module:

The feedback module facilitates the collection of user feedback on the chatbot's responses. It also supports iterative learning by incorporating feedback into the model training process. This continuous improvement loop ensures that the chatbot evolves over time, becoming more effective in understanding and responding to users' emotional needs.

7. OUTPUT EXPERIMENTS



Home Page

Admin Home page



User Registration

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User Chatbot



8. CONCLUSION

In this work, an astute chatbot is worked for the client who can talk transparently to the bot since there is no dread of judgment and it attempts to recommend a few methods for surviving their downturn. To recognize feeling of client from talk text and answer in like manner, profound learning calculations LSTM (RNN) is utilized which handle slope issue. There are still such countless variables which influences the discussion, where need to chip away at that

9.FUTURESCOPE

The future outcomes of a project focused on a depression chatbot using deep learning could potentially have several positive impacts:

1. Improved Mental Health Support: The deployment of such a chatbot could significantly improve access to mental health support for individuals experiencing depression. By providing a

non-judgmental and readily available platform for expressing emotions and seeking guidance, the chatbot could reach a wider audience than traditional therapy options.

2. Reduced Stigma: Many individuals hesitate to seek help for mental health issues due to stigma or fear of judgment. A depression chatbot offers a discreet and anonymous way for individuals to receive support without the fear of being stigmatized, thus potentially reducing the stigma associated with seeking help for mental health concerns.

3. Personalized Assistance: Through the use of deep learning techniques like RNN LSTM encoder-decoder models, the chatbot can continuously improve its responses based on user interactions and feedback. This personalization can lead to more effective support tailored to individual needs and emotional states.

4. 24/7 Availability: Unlike traditional therapy options that operate on fixed schedules, a depression chatbot would be available 24/7, providing support whenever individuals need it most, including during moments of crisis or when professional help is not immediately accessible.

5. Data Insights for Research: The interactions between users and the chatbot could generate valuable data insights into patterns of depression, common triggers, and effective coping mechanisms. Researchers and mental health professionals could leverage this data to better understand and address depression on a broader scale.

6. Integration with Existing Support Systems: The chatbot could potentially be integrated with existing mental health support systems, such as hotlines or online counseling platforms, to enhance their capabilities and reach more people in need of assistance.

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