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Intelligent Chatbot for Prediction andManagement of Stress

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***Abstract* - Stress Management and Prediction application is an end user support and consultation project. Here, a standalone application which we can further embed with websites or phone application. The application is fed with various details and the stress associated with those details. The application allows user to share their stress related issues. Here, we use neural network and machine learning technique like decision tree to train the data and guess the most accurate stress level that could be associated with patient's details and according to that it will show the measures to take place. This application can be used to identifying the stress level and its management.**

***keyword* -** Stress Prediction, Decision Tree, Python, Stress, Chatbot, Machine Learning

I. INTRODUCTION

This Project "Intelligent Chatbot for Prediction and Management of Stress" will be an application that can be integrated in website, it will give user the ability to identify the stress based on the given questions and answers. We have chosen this project because we want to provide user more easy, user-friendly, interactive way to find out about their stress. Bot will ask them few questions and according to the chosen answers, bot will show them the result and management of stress. We have used python and Rasa framework for this work and further required things to complete the work. Chatbot is a program that is designed to stimulate conversations or talk with human users. In this User communicates with the bot either with text or voice. Chatbot give logical reply or the already stored answers to the user for the questions. It is just like a user is talking to the other person. They interpret the questions and provide answer to them. They are used in messaging apps, e- commerce, etc. They can be customized for either single company based or public based. Stress is a physiological kickback to the social, behavioral or other physical issues that people face in their real-life activities, including in their environments like workplace, household, etc. Continued stress consumption can lead to some serious and extreme health issues, such as causing physical illness through its physiological consequences, changes in behavior, and problems with social isolation. Stress affects tons of individuals in their life like mood, behavior, health and quality of life. Disorders include: Headaches, heart attacks, depression, and system abnormalities include illnesses. They further note that, relative to the opposite forms of stress, acute stress appears to attract less consideration from researchers. Acute stress is also caused by multiple kinds of immediate emotional and physical challenges that people can encounter in several ways during ongoing everyday circumstances. This triggers certain physical changes, such as an increase in the heart, and these changes can induce severe long- term diseases and have a negative effect on the emotional and physical well-being of a person.

Open Sourcing Mental illness (OSMI) is a non-profit organization that assist awareness about mental health in workplaces and also suggest workplaces to identify the best resources so that they can provide best atmosphere to their employees. In 2017, a survey conducted by OSMI mental health in workplace where 750 responses taken from various employees who were working in range of tech divisions. In this individual's personal and professional factors were taken. And used this survey's dataset to trained different ML models to analyse and find the patterns of stress and mental disorders .The models used in machine learning to detect stress and anxiety based on datasets are: Logistic regression, KNN classifier, Decision Tree, random forest classifier, boosting and bagging. It is found that people working in tech company were in slightly high danger of developing stress as compared to others. To make or provide good

atmosphere in workplace Better HR policies should be provided to employees.

Stress becomes a major issue in today's time and also lead to many health problems of People of different professions, lifestyles, gender and age groups. In 2000, a survey of EWCS described that 62 percent of American's said that their work had a high impact on their stress. Among them 54 percent employees are aware of their health problems and it is also found that among four employees one has to take one day off to their work to cope with their stress. The avoidance of stress in every day at the workplace is not possible. There are a lot of technologies that services for the measurement of the stress level such as heart rates, GSR and many tools that analyze the correlations between the up and downs in stress level based on everyday events (what, with whom, etc.). Stress at work is common and some of them are a normal part of our work.

Excess stress leads to many health problems and it also has a huge impact on productivity of an employee. So as an employee we must be aware about stress and its preventions. And also spread awareness about stress. Following is the organization of the paper. Section II contains information about the Psychological Diseases which we have studied, it contains information about stress, anxiety, phobia, depression & insomnia. Section III contains the related study which have been done in this field or which is useful for this. Section IV is about the work which has been proposed to make a model for the work.

II. LITERATURE SURVEY

1. REFERENCE TITLE

Payam Kaywan, Khandakar Ahmed, Yuam Miao, Ayman Ibaida, Bruce Gu, "DEPRA: An Early Depression Detection Analysis Chatbot", Springer, 2021

Because of the increasing development of chatbots, the use of Artificial Intelligence (AI) in the assessment and treatment of mental health has gained traction in recent years. Recent attempts have yielded promising results, such as the facilitation of recognising the depression level in patients' profiles. which has increased the goal of finding a solution to assist medical professionals in detecting depression. To address mental health symptoms, we conceived and created DEPRA, which is based on modern bot platforms with early depression identification. DEPRA is based on Dialogflow as a conversation interface and is trained using individualised utterances collected from a specific population.

Payam Kaywan, Khandakar Ahmed, Yuam Miao, Ayman Ibaida, Bruce Gu, 2019. "Combating Depression in Students using an Intelligent ChatBot: A Cognitive Behavioral Therapy." 2019 IEEE 16th India Council International Conference (INDICON)

The authors developed an intelligent social therapeutic chatbot in this paper that divides text into emotion labels such as Happy. Joy. Shame, Anger. Disgust, Sadness, Guilt, and Fear. Furthermore, depending on the emotion label, it determines the users' mental condition, such as stressed or depressed, utilising conversation data from the users. We used three common deep leaming classifiers for emotion detection: Convolutional Neural Network (CNN). Recurrent Neural Network (CNN), and Hierarchical Attention Network (HAN) (HAN). In particular, the suggested chatbot methodology is domain specific, with the chatbot attempting to prevent pessimistic actions and rebuild more constructive attitudes through user engagement.

III. SYSTEM DEVELOPMENT

In this project, we suggested an intelligent social therapeutic chatbot that identifies an individual's stress levels. Using conversation data, it identifies the users' mental state, such as stressed or depressed, based on the emotion label. We used one of the most prominent machine learning classifiers, Decision Tree, to detect stress, In particular, the suggested chatbot methodology is domain-specific, i.e. through user interaction.

Apps and web-based chatbots can give useful and relevant assistance to healthcare personnel in assessing and guiding the management of a variety of health concerns, especially when human resources are limited. Mental health chatbots could be useful in assisting patients suffering from anxiety and depression, as well as providing vital support

IV. CONCLUSION

This Paper gives us the information about the psychological diseases and the effect it is giving to us and through a chatbot we can predict those and give management to it. Stress, anxiety, depression, phobia and insomnia were mentioned in this paper. Decision tree was used to design the model and each leaf node provided us with the management information. We also gave number to measure the range of the stress i.e. 0,1 is for Low Depression 2,3 for medium Depression 4 is for high depression We were able to make a working prototype of our approach. In this we only mentioned about Depression and if the person is having high, medium or low. We have given pre-defined buttons for the ease of User. They just need to click on the button and it will store that and move ahead.

V. FUTURE ENHANCEMENT

Chatbots are introduced as cost-effective and efficient on-demand virtual aides foe a variety ofmental health issues, such as anxiety and depression, as part of the effort.

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