Psych Match: A Mental Health Tracker

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Abstract−The project focuses on building a mental health tracker. You will try to get an overall estimate of the mental state of your user , find out if they are suffering and then suggest remedies they can take to get out of their mental condition. A user is given some questions in the form of few questionnaires and based on the answers that they provide, you will suggest tasks to them and maintain a record of their mental state for displaying on a dashboard. Mental disorders are widespread and prevalent in countries all over the world. Our paper aims to propose a system design, which is based on the web app "PsychMatch", which identifies the mental health of the user. According to our survey, the application must have an authentication system, so that the data will remain secure. An application should be easy to use and include options that allow the user to customize it, and goals and memories can be saved. The system uses Natural Processing Language, Machine Learning (algorithm random forest), and MySQL for sentiment analysis, questions must be shuffled. A graph will be generated based on the weekly and daily data entered by the user, and you will see a graph of the weekly improvement. Using this application can help a person overcome their mental illness in order to live a happier life by suggesting some tasks or activities by a doctor that they can do to accomplish their goals.

Keywords—Anxiety, Depression, Mental Health, Deep learning, Questionnaire, Depression, common mental disorders, approaches to mental wellbeing

1. INTRODUCTION

Mental health reflects a person's emotional, psychological, and social well-being. According to the World Health Organization (WHO), out of four people, one suffers from some sort of mental or neurological disorder and currently, about 450 million people are in the clamp of mental illness. Globally 332 million people were found to be a victim of depression in 2015, 7.5% of Indians suffer from major or minor mental illness. Hence, the idea is to develop an end-to- end solution for identifying and treating mental health issues. In today's world, with the education systems being more stressful than ever, it has become very important to focus on the mental health of the students, especially in professional colleges. Traditionally, the model for assisting people with mental disorders has been finished via face-to face conferences with specialized health professionals, usually psychologists and psychiatrists, at a frequency that can vary relying on the assessment of the case, but is generally once a month to 3 times a week. However, because the number of

individuals tormented by a mental situation continues to rise, it is crucial to address the project of lowering or, at least, slowing the rate of growth. One of the proposed alternatives is to apply diverse patient resource strategies to be had via mobile gadgets and software. Such methods may be used to gather mental fitness facts, prompt individuals to reply to questions about what they may be doing and/or experiencing in their everyday habitual. In order to undertake mental health interventions remotely and offer access to health resources, which include the construction of conversation channels with mental health experts such answers are being developed in the context of mobile health research.

The outcome of being in a depressed state can be very depressing to hear. People generally react in very unusual ways. They might show symptoms like getting angry on little things, over-eating or less eating, overthinking, deprived of sleep, or even in extreme conditions committing suicide. There are medications prescribed by psychologists like antidepressants, anxiolytics, etc. Even patients can talk to their psychiatrist regarding the problem they are facing on one-on one physical interactions. Depression can happen to anyone. Usually, this can happen to people of age between 15-29 years but this is not always true. Depression can strike any person deprived of their age whether it is a school going 16-year-old kid or a famous movie star or an energetic and healthy sportsperson, this can be caused to anyone. Speaking of the infamous athlete Michael Philips, speaking to a recent episode of the Axe File Podcast on CNN, he stated the "I straight wanted to die". Later on, he joined the 23-year-old company named Medibio for his treatment. Not only alone Michael Philips suffered from depression but there are other famous personalities like Dwayne Johnson, J.K. Rowling, Shah Rukh Khan, Deepika Padukone, etc. suffered this illness once throughout their lifetime. Nowadays, mental illness is increasing day by day. Every other person is suffering from some kind of mental health issues. But there has been a failure in curing some sections of individuals across the globe. In high-income countries, only 35-50% of people in need receive basic treatment. Low and middle-income states record the shocking gap of 76-85% untreated individuals. The reason for this imbalance varies because there is limited access to diagnostics treatment and inability to identify the problem in the first place.

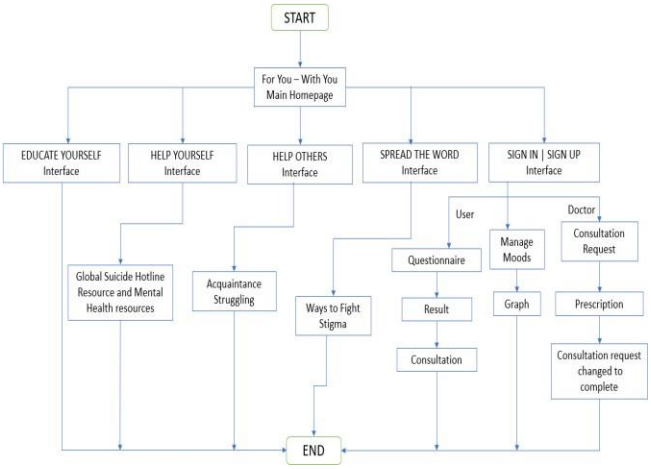
This paper aims to develop an application to keep track of user's behavior, both online and offline, to understand and identify the possible mental health issues using various analytical and psychological methodologies. In this paper, we intend to develop an end-to-end solution for identifying the possibility of a mental illness, as well as, provide our user with a platform to deal with his/her condition and live a better life every day.

2. LITERATURE SURVEY

In [1] this paper is based on comparison of different machine learning algorithms. Machine learning was applied to determine five different severity levels of anxiety, depression and stress. Data were collected using standard questionnaires measuring the common symptoms of anxiety, depression and stress. The accuracy of naïve Bayes was found to be the highest, although Random Forest was identified as the best model. In [2] in this model, mental screening questionnaires were there for tracking mood and mental condition. This model helps rationalize negative thoughts, meditation guide and have activities and games for improving attention, memory etc. The technology used for this model was Machine Learning and AI. The programming language used was python. In [3] the focus on the text entry pattern to track multiple emotions. The model is based to design, develop and implement an android based smartphone keyboard Emokey, which monitors user's typing pattern and determines four emotion states (Happy, Sad, Stressed, and relaxed) by developing an on device personalized machine learning model. The technology used for this model was machine learning and the programming language was python. In [4] SituMan logic uses LTA (Location, Time, and Activity) logic. The location, time and activity were directly obtained from the device and a

notification were sent by the mood Buster. This notification typically requests patients to rate their levels of mood, anxiety, and sleep quality. From these situation aware notifications, the mood buster may be able to correlate the patient's status with their situations. The technology used for this model was Machine learning.In [5] smartphone will access and monitor sleep, depression and anxiety. Show early associations between behaviors and sleep parameters and agreement between clinic-based assessments, active smartphone data capture and passively collected data. The technology used in this model was AI, Machine Learning and java.In [6] this model aims to identify, analyze and characterize the current state of a person by mood tracker, Chatbot, test was provided. Python and machine learning technology was used for this model.In [7] this model develops various systems for mental health monitoring virtual counseling, precision therapy and diagnostic systems by reviewing Chatbot and virtual counseling. The technology used was AI, Machine Learning and Neural Processing Language for text analysis.

3. PROPOSED SYSTEM



The users will have free access to the website and can create an account to use all the features of the website. Users that don't have login , can sign up and continue further. After that, some questions will be asked to the user. According to the answer given by the user, current mental state and current mood will be identified and the result will be shown to the user. Users can see their mental progress in terms of a graph. According to the report, some activities will be suggested to the user to improve their mental health condition.

The questionnaire forms the part of rule based learning technique where 10 questions were selected after research which is mostly used by Psychological doctors to check the state of mind of an individual. The questions are in an MCQ format and have three answers. The answers have been given a predefined range from (0-3) . Based on the answers to the question by an individual, the value is given. The sum of values from 10 questions is then averaged to get the final result.

Based on the questionnaire , an issue such as anxiety , depression , post-traumatic stress disorder or other illness will be detected . We will further , try to evaluate the intensity of the illness and then accordingly suggest therapy or meditation or suitable psychiatrists for treatment.

- The users will have the option to choose the specific mental health assessment test and will get questions based on that health issue . This would help to evaluate the intensity of the health issue and the doctors can accordingly give the prescription .
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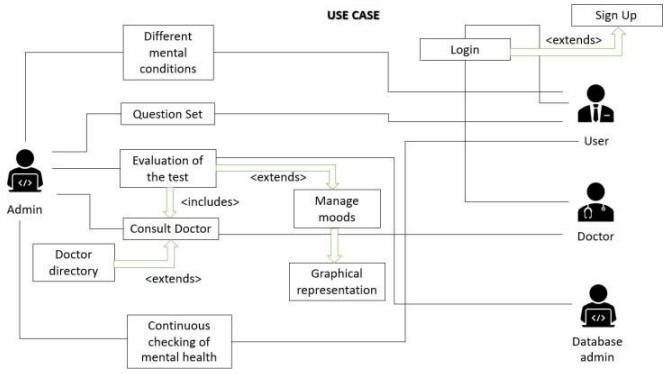


Manage Moods:-

- We can enter daily data regarding our anxiety , depressed mood , elevated mood , talk therapy , psychotic thoughts and sleeping pattern .
- Along with this , we also have implemented the graphical representation of the daily records to determine the growth and improvement

Doctor's Interface:-

- One of the major factor of this website is the doctor's interface . As soon as a patient has sent a request for consultation , the doctor receives the request .
- The doctor will be able to see the assessment taken by the patient .
- The doctor can analyze the answers and then give a suitable prescription or habit for the user to follow .

Deployment :-

- We deployed our website via Visual Studio on Windows platform and with the help of Google Chrome as the main browser.

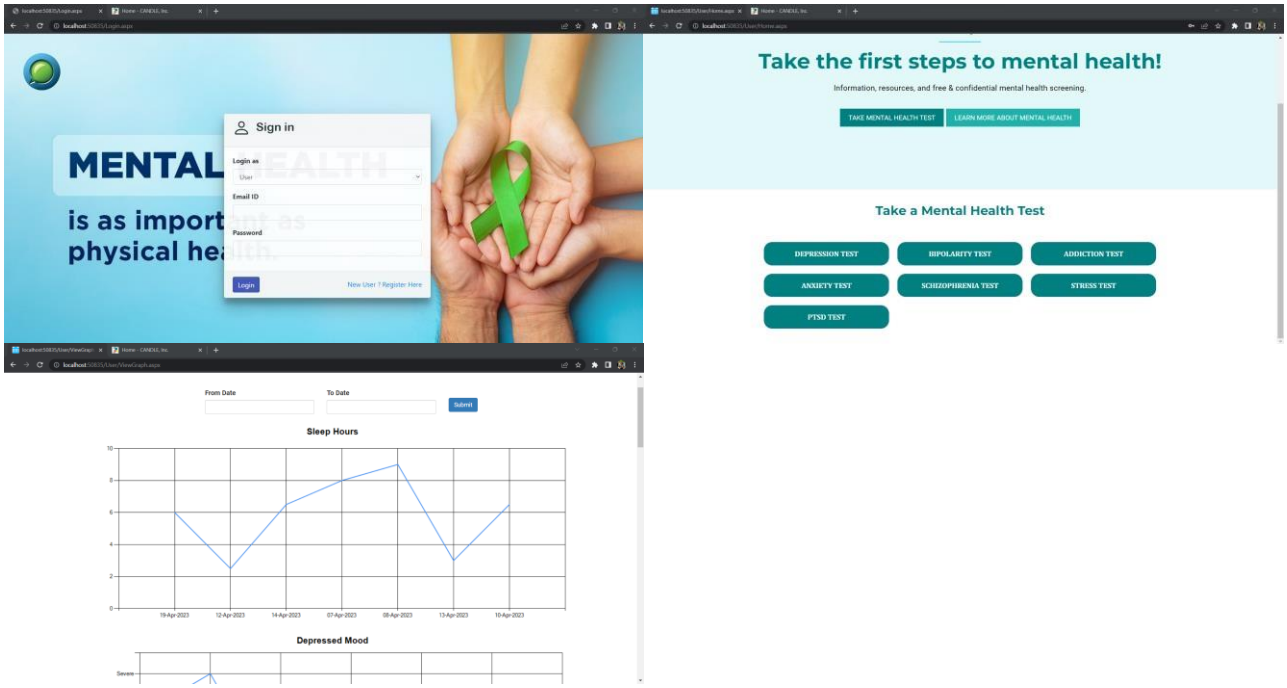
To understand human language by the computer, we need a process called NLP. NLP means natural language processing. NLP helps to communicate with humans in their own language and also makes it understandable to computers. In short, it is a communication medium between humans and computers. Sentiment analysis is a subfield of NLP and with the help of machine learning techniques, it tries to identify the exact insights.

- One of the most prominent and easy to use libraries is textBolb. txtBolb is a library provided by NLP. TextBlob actively used the Natural Language Toolkit (NLTK) to achieve its tasks. NLTK is a library which gives an easy access to a lot of lexical resources and allows users to work with categorization, classification and many other tasks. TextBolb is a simple library which supports complex analysis and operations on textual data. TextBolb returns the polarity and subjectivity of a sentence. Polarity lies between [-1,1], -1 defines a negative sentiment and 1 defines a positive sentiment . This will help us to identify the intensity of the person's emotions and how much they are suffering .

4. RESULT AND CONCLUSION

According to a WHO research, depression will be a major cause of mental disease throughout the world, and individuals must pay more attention to their mental health in order to live a healthy social and professional life. Online predictors for outcomes can be used by those who are afraid to contact humans for diagnosis. Mental health directly affects the way we think, feel and act. It also has a tremendous effect on our physical health. Unfortunately, recognizing mental health concerns is a challenging undertaking, and mistakes can lead to significant consequences. More so, many taboos have developed around mental sickness and thus people prefer avoiding the issue rather than consulting professionals. Hence, through this paper, we would like to help our community by developing a user-friendly android application which would allow them to easily diagnose their mental health problems and will also help and support them to improve their mental health, right from the user's home. We are overcoming the drawback of the existing system, and

providing a smart system that will not only monitor usermental health with security but also show recommendations whenever necessary.



6. FUTURE SCOPE

In future work, the aim is to develop a android application to provide an end-to-end solution for the diagnosis of possibility of mental health illness and treating it.

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