Virtual self care companion

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JSPM's RAJARSHI SAHU COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

"Virtual Selfcare Companion"

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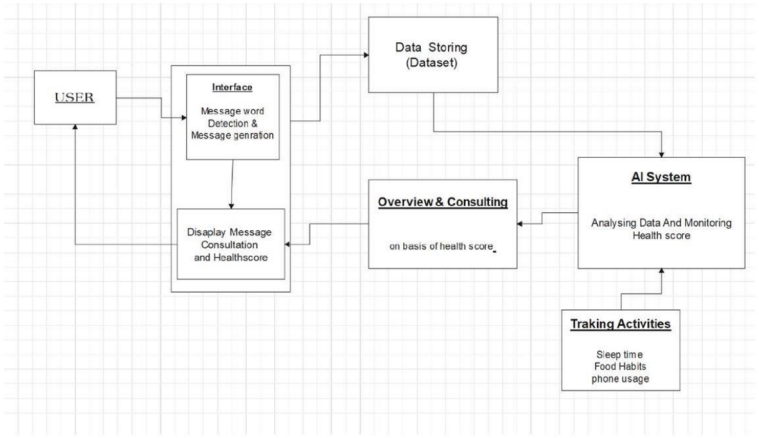
Introduction:. Mental disorder has extensively become worldwide concern resulting large population left untreated, where 1 in 3 adults in the age of 18 - 40 and 4 in 10 children in the age of 12-17 are likely to be distressed cause of hectic schedule . It is predicted that mental disorder can cost $20 trillion globally between 2018 and 2050 cause of reduced capacity of working power . Due to the scarcity of funding, mental health illiteracy and mental health professionals globally. In developing countries like India lack of awareness creates it hard to normalize the issues related to mental disorders . According to the World Health Organization, In other developed countries 20% to 50 % of population suffering with these kind of illness are treated with proper mental health care , respectively. In countries like Japan 65% of the working people face mental disorders. In recent decades this is one of the significant factors leading to increase in suicidal behaviors. As a result, new solutions are required to compensate for resource shortages and promote patient self-care.

The application of Artificial Intelligence (AI) has been prompted by a global lack of mental health advisors and therapists like chat application and mental health Consultancy over Video conference, To fulfill the requirements of people suffering from mental health problems.Computerand automation based treatments , like mobile applications, can vanquish these barriers and be easily accessible. According to a WHO analysis of 15,000 websites and applications, 30% of them are focused on mental health treatments and counselling..

These Applications involve a person's self interest in his treatment and allows them to self monitor rather than following traditional on clinic methods at initial stages remotelyEmpowerment is facilitated by giving patients an active, rather than a passive, role in their own healthcare management. The appropriate way and correctness of the mental health detection was also investigated by recognizing its data analysis approaches , comparison, challenges, and limitations. Then the collected data was driven and through different statistics Machine learning algos. And finally, we discuss challenges, observations and outcomes in using ML algos to improve and precise our understanding of mental health conditions and also suggest some therapist proven methods and directions in order to improve and ease mental health diagnosis and treatment.

System Architecture:



Methodology:

1) Data cleaning: The data set collection is an important part. We collected balanced and quality data from Kaggle. The remaining residue duplicate and missing data is sorted in order to create a clean and reliable set on which training validating and testing sets would fit.

2) Data encoding: In this process the Modification of data takes place where categorical responses are assigned some weightage. generally, the data is encoded into 1 &0 strings in order to classify later

3) Feature Scaling: It is important because the independent features in the dataset are required to be standardized in some fixed scale. if it is not implemented then ML algorithm starts making values dominant and weighting high on the basis of magnitudes, irrespective of Units

4) Tuning : Tuning of data is very important as it helps to increase the accuracy of the model without overfitting or creating too much high variance. This is important in order to implement a dependable model.

5) Decision tree classifier : The reason using Decision tree is to provide a model flexibility to learn the functions on if - then - else decision rules. it allows learning from training data to the behavior of target variable and for testing what could be the possible classification or predictions

6) Random Forest:
Random forest classifier is most used classifier algorithm because of its ease of use and ability of decision making at various subsets of the dataset it improves the accuracy by taking averages of different compositions . It is an ensemble of many decision tree algorithms.

7) Bagging: Bagging is also a very important machine learning ensemble meta - algorithm with superior ability to identify patterns in the given statistical problem the stability and accuracy of the model makes it useful for making regression and classification predictions.

8) Boosting: Basically used as a support algorithm that helps the slow learner algorithms to learn fast and accurately .

9) Stacking: It entails teaching a learning algorithm to integrate the predictions of a number of other learning algorithms.

Conclusion: Mental Health Detection can be done using machine learning and deep learning algorithms. ML AI based chatbots are making an impact in almost every sector. There are thousands of apps assessing clinicians in managing, directing and interacting with the patients. Also, the market is flooded with personal healthcare apps in order to reshape the health economy. frequent and positive responses from the practitioners and experts have improved the accuracy and reliability of health apps. Chat bot on the other hand can be a great resource to use as a virtual self-care companion in order to have a monitoring on mental health technique like NLP - Neural Networks can be used in order to identify the traces in the data to predict the mental state and emotional state of a person. app-like features give the user a reliability of privacy and asses in the self-monitoring. It also helps in self-awareness like unhealthy lifestyle, mood swing patterns, work stress, triggered anxiety, negative thought and behavior filtering much more. The ML based application also give curing methods on the basis of

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