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ELIXIR – MENTAL HEALTH TRACKER

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Abstract: THE USE OF MENTAL HEALTH TRACKER IS TO TREAT ANXIETY AND DEPRESSION IT IS WIDESPREAD AND GROWING. SEVERAL REVIEWS HAVE FOUND THAT MOST OF THESE WEBSITES DO NOT HAVE PUBLISHED EVIDENCE FOR THEIR EFFECTIVENESS, AND EXISTING RESEARCH HAS PRIMARILY BEEN UNDERTAKEN BY INDIVIDUALS AND INSTITUTIONS THAT HAVE AN ASSOCIATION WITH THE WEBSITE BEING TESTED. ANOTHER REASON FOR THE LACK OF RESEARCH IS THAT THE EXECUTION OF THE TRADITIONAL RANDOMIZED CONTROLLED TRIAL IS TIME PROHIBITIVE IN THIS PROFIT-DRIVEN INDUSTRY. MENTAL HEALTH WEBSITE CAN BE HELPFUL TO TRACK OVERALL WELLBEING AS WELL AS MONITOR MENTAL HEALTH DISORDER.

I. INTRODUCTION

In our day-to-day routine, emotional wellness is need of life. Psychological well-being implies a perspective in which the individual figures out his/her own capacities and incapacities, however emotional well-being will be metal sickness, and it can influence for what seems like forever. People's work environment and others are also affected by mental relationships. Emotions needed to be expressed. An illustration of mental health conditions such as eating disorders, emotional disorders, bipolar disorder, and anxiety disorders. During pandemics (from 2 years) in light of severe lockdown we needed to remain in home. We had a lot of time because we didn't have anything to do. We keep thinking about a variety of things, which makes us annoyed or angry because we think too much, are frustrated, and lack confidence. Separation, jobless, deficiency of cash and some more Contemplations rotates to us and that influences our psychological well-being. Numerous people developed addictions to alcohol and drugs. People cannot freely discuss their mental health. They are afraid that others will criticize and mock them. In the model for this project, we used a strategy based on sentiment analysis. The sentiment of the user can be determined using the sentiment analysis method. Opinion investigation, as the name recommends, utilizes words or surveys to evaluate the client's feelings and feelings. It primarily focuses on sentiment analysis of text data. A producer known as NLP is required for a machine to comprehend human language. NLP empowers people to talk in their local tongue while at the same time A subfield of natural language processing known as sentiment analysis seeks to provide precise insights through the application of machine learning techniques. This model will make use of the random forest classifier, a machine learning technique. Individuals, families, communities, and societies as a whole are affected by mental health, which is 1 an essential component of overall well-being. Notwithstanding, psychological well-being issues keep on being exceptionally common, and there is a squeezing need to successfully address them. An overview of a mental health project, including its significance, goals, and potential outcomes, is the goal of this introduction. The Value of Good Mental Health: For individuals to have fulfilling lives and make a positive impact on their communities, mental health is essential. A person's quality of life, relationships, and productivity can all be significantly impacted by mental health issues like stress, anxiety, and depression. In addition, the global burden of mental disorders emphasizes the urgency of making mental health promotion and early intervention top priorities. The Mental Health Project's Goals: The mental health project aims to address mental health issues and enhance individuals' well-being. It may have specific goals like: Bringing issues to light: enhancing public awareness of mental health issues, including the most common mental disorders, their symptoms, and the availability of support services. Advancing early mediation: Empowering early discovery and intercession to forestall the movement of emotional wellness issues and lessen the related weight. Offering help and assets: conceiving and putting into action programs to help people who are struggling with mental health issues, such as giving them access to therapy, counseling, and support groups. Eliminating stigma: Testing cultural marks of disgrace and generalizations encompassing psychological wellness, cultivating a more comprehensive and strong climate for people with emotional well-being concerns. Working together with partners: involving a wide range of stakeholders, such as healthcare providers, community groups, and policymakers, to guarantee a comprehensive and coordinated approach to mental health care. Possible Effects: A mental health project that is well thought out and put into action can have a significant impact on positive change. It has the potential to enhance the mental well-being, quality of life, and overall social and economic development of communities. By diminishing disgrace, advancing early intercession, and offering help benefits, the undertaking can assist people with driving better and additional satisfying lives.

II. OBJECTIVE

The objective of Elixir is to develop a user-friendly and effective platform that enables individuals to monitor, manage, and improve their mental well-being. The website aims to provide users with the tools and resources necessary to track their mental health, gain self-awareness, and promote positive behaviour change. The specific project objectives include:

- Self-Monitoring and Awareness:
  Enable users to track and monitor their mental health by providing features such as mood tracking, sleep monitoring, stress levels assessment, and symptom monitoring. The website should empower users to develop a better understanding of their mental well-being, identify patterns, and recognize triggers or warning signs.

- Goal Setting and Progress Tracking:
  Allow users to set personalized goals related to their mental health and track their progress over time. The website should provide visualizations and progress indicators to help users stay motivated, celebrate achievements, and identify areas that require further attention.

- Resource and Information Hub:
  Serve as a comprehensive resource hub, providing evidence-based information, educational materials, and practical resources related to mental health. Users should have access to articles, videos, self-help tools, and relevant links to external sources for further support and guidance.

- Personalized Recommendations and Insights:
  Leverage tracked data to provide personalized recommendations and insights to users. The website should use algorithms or machine learning techniques to analyze user data and offer tailored suggestions for self-care activities, coping strategies, mindfulness exercises, or relevant professional services based on their specific needs and goals.

- User Support and Community:
  Facilitate social support and engagement by incorporating features that allow users to connect with a supportive community. This may include discussion forums, peer support groups, or the option to share experiences, challenges, and successes with others who may be going through similar experiences.

- Privacy and Data Security:
  Ensure the highest standards of data privacy and security to build trust among users. Implement robust security measures to protect user data, comply with relevant data protection regulations, and provide users with control over their data, including the ability to delete or export their information.

- User Experience and Interface Design:
  Create a user-friendly and intuitive interface that is accessible across different devices and platforms. The website should prioritize ease of navigation, clear presentation of information, and a visually appealing design to enhance user engagement, satisfaction, and overall user experience.

III. PROBLEM STATEMENT

Many individuals face challenges in monitoring, managing, and improving their mental well-being due to limited access to effective tools and resources. Existing methods for tracking mental health, such as paper-based diaries or fragmented smartphone apps, often lack user-friendliness, personalization, and comprehensive support. This creates a gap in addressing the mental health needs of individuals who seek a convenient, accessible, and user-centric platform for tracking their mental well-being.

Additionally, privacy and data security concerns pose significant barriers to individuals sharing sensitive mental health information online. The lack of transparent data handling practices and limited control over personal data erode user trust and hinder the adoption of digital mental health tracking platforms.

Furthermore, the absence of personalized recommendations and insights based on tracked data prevents users from receiving targeted support and guidance tailored to their specific needs and goals. This lack of personalized feedback hampers the effectiveness of mental health tracking efforts, reducing user motivation and limiting the potential for positive behaviour change.

Thus, there is a need for a comprehensive and user-friendly mental health tracker website that addresses these challenges. The website should provide a secure and privacy-conscious environment where individuals can easily track and monitor their mental well-being. It should offer personalized recommendations, evidence-based resources, and a supportive community to empower users in their journey toward improved mental health outcomes.

By addressing these issues, the mental health tracker website aims to bridge the gap in accessible and effective mental health tracking tools, empower users with personalized support, and contribute to promoting mental well-being on a broader scale.

IV.LITERATURE SURVEYS

In copy-move tampering, a region (of any size) from the image is selected to perform the copy-move operation and it is pasted to some other part of the same image. So there will be very high correlation between these two regions. The objective of the copy-move tampering detection method is to detect duplicated regions in the given image. The similarities (correlation) or distance between features extracted from two different regions of the image indicate the duplication. There are a lot of mental disorders like bipolar one, depression, and different forms of anxieties. conducted a paper-based survey in which 1222 patients from 17 countries were participated to detect bipolar disorder in adults. This survey was translated into 12 different languages with some limitation that it did not contain any question about technology usage in older adults. According to Bauer et al, digital treatment is not suitable for the older adults with bipolar disorder. Researchers are working on the most interesting and unique method of tremendous interest to check the personality of a person just by looking at the way he or she is using the mobile phone. De Montjoye collected data set from US Research University and created a framework that analyzed phone call and text messages to check the personality of the user.

Literature survey:

Birnbaum, F., & Rizvi, S. L. (2020). Technology in Mental Health: Applications, Advances, and Limitations. Journal of Clinical Psychology, 76(10), 1776-1806.

Provides an overview of various technologies, including mental health tracker websites, their applications, effectiveness, and limitations in improving mental health outcomes.
Torous, J., & Roberts, L. W. (2017). Needed Innovation in Digital Health and Smartphone Applications for Mental Health: Transparency and Trust. JAMA Psychiatry, 74(5), 437-438.

Discusses the importance of transparency and trust in mental health tracker websites and emphasizes the need for rigorous evaluation and evidence-based design to ensure their effectiveness and user acceptance.
Nicholas, J., Larsen, M. E., Proudfoot, J., & Christensen, H. (2015). Mobile Apps for Bipolar Disorder: A Systematic Review of Features and Content Quality. Journal of Medical Internet Research, 17(8), e198.

Conducts a systematic review of mobile apps, including mental health tracker websites, designed for individuals with bipolar disorder. Examines their features and content quality to provide insights into effective design elements for mental health tracking.
Bakker, D., Kazantzis, N., Rickwood, D., & Rickard, N. (2016). Mental Health Smartphone Apps: Review and Evidence-Based Recommendations for Future Developments. JMIR Mental Health, 3(1), e7.

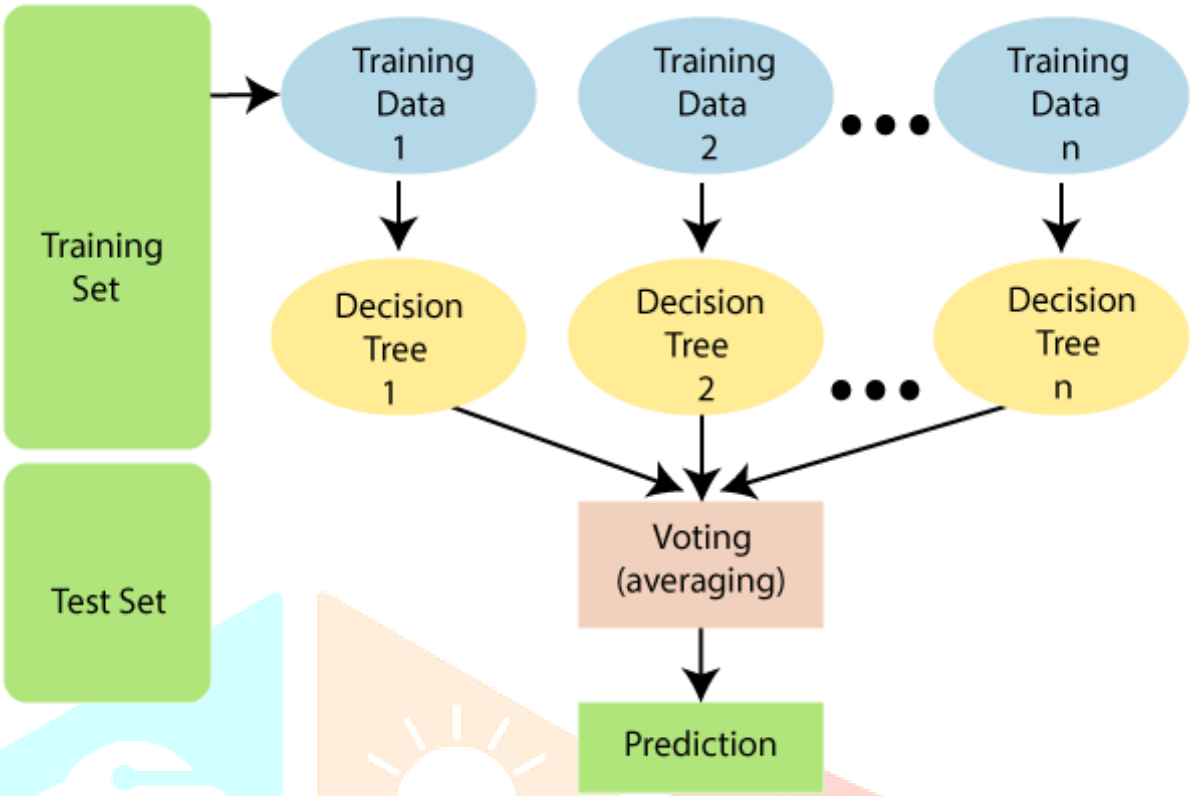
Reviews smartphone apps, including mental health tracker websites, and provides evidence-based recommendations for their development. Discusses the importance of user engagement, evidence-based content, privacy, and ongoing evaluation in creating effective mental health tracking platforms.
Schueller, S. M., & Mohr, D. C. (2020). Examining the Quality, Safety, and Privacy of Mental Health Apps: A Systematic Review. JAMA Psychiatry, 77(7), 857-864.

Systematically reviews mental health apps, including tracker websites, to assess their quality, safety, and privacy. Highlights the need for clear privacy policies, secure data handling, and ongoing monitoring to ensure user trust and protection.
Berry, N., Bucci, S., Lobban, F., & Emsley, R. (2019). Acceptability of Interventions Delivered Online and Through Mobile Phones for People Who Experience Severe Mental Health Problems: A Systematic Review. Journal of Medical Internet Research, 21(1), e10929.

Conducts a systematic review of online and mobile interventions, including mental health tracker websites, for individuals with severe mental health problems. Explores the acceptability and user experiences of these interventions.
Stawarz, K., Preist, C., & Tallon, D. (2018). User Experience of Cognitive Behavioral Therapy Apps for Depression: An Analysis of App Functionality and User Reviews. Journal of Medical Internet Research, 20(6), e10120.

Analyzes user reviews of cognitive-behavioral therapy apps, including mental health tracker websites, to understand user experiences, functionality, and usability. Offers insights into user perspectives and expectations.
Huguet, A., Rao, S., McGrath, P. J., Wozney, L., Wheaton, M., Conrod, J., & Rozario, S. (2016). A Systematic Review of Cognitive Behavioral Therapy and Behavioral Activation Apps for Depression. PLoS ONE, 11(5), e0154248.

V. METHODOLOGY



VI. DESIGN AND ALOGRITHM

01	Planning the review	• Develop the research questions or objectives • Selection of data sources. • Searching the terms definition of the topic.
02	Conducting the review	• Publication of the related research articles or papers are gathered and identified. • Study selection. • Analysis of the research materials or studies that fulfill research questions.
03	Evaluation	• Extract the data from the selected papers. • Analysis the data or evidence from the selected papers. • Determine the trends of the research based on the topic.
04	Discussion and Conclusion	• Provide the limitations, drawbacks or gaps of the research. • Determine the future opportunities of the research direction. • Provide a conclusion based on the findings.

Fig6.1 Random Forest Method

Random Forest is a popular machine learning algorithm that belongs to the supervised learning technique. It can be used for both Classification and Regression problems in ML.
"Random Forest is a classifier that contains a number of decision trees on various subsets of the given dataset and takes the average to improve the predictive accuracy of that dataset."
The greater number of trees in the forest leads to higher accuracy and prevents the problem of overfitting.

- Support Vector Machine or SVM is one of the most popular Supervised Learning algorithms, which is used for Classification as well as Regression problems. However, primarily, it is used for Classification problems in Machine Learning.
- The goal of the SVM algorithm is to create the best line or decision boundary that can segregate n-dimensional space into classes so that we can easily put the new data point in the correct category in the future.
- SVM chooses the extreme points/vectors that help in creating the hyperplane. These extreme cases are called as support vectors, and hence algorithm is termed as Support Vector Machine.

- ANN is rarely used for predictive modelling. The reason being that Artificial Neural Networks (ANN) usually tries to over-fit the relationship. ANN is generally used in cases where what has happened in past is repeated almost exactly in same way.
- An artificial neural network has three or more layers that are interconnected. The first layer consists of input neurons. Those neurons send data on to the deeper layers, which in turn will send the final output data to the last output layer.
All the inner layers are hidden and are formed by units which adaptively change the information received from layer to layer through a series of transformations. Each layer acts both as an input and output layer that allows the ANN to understand more complex objects. Collectively, these inner layers are called the neural layer.

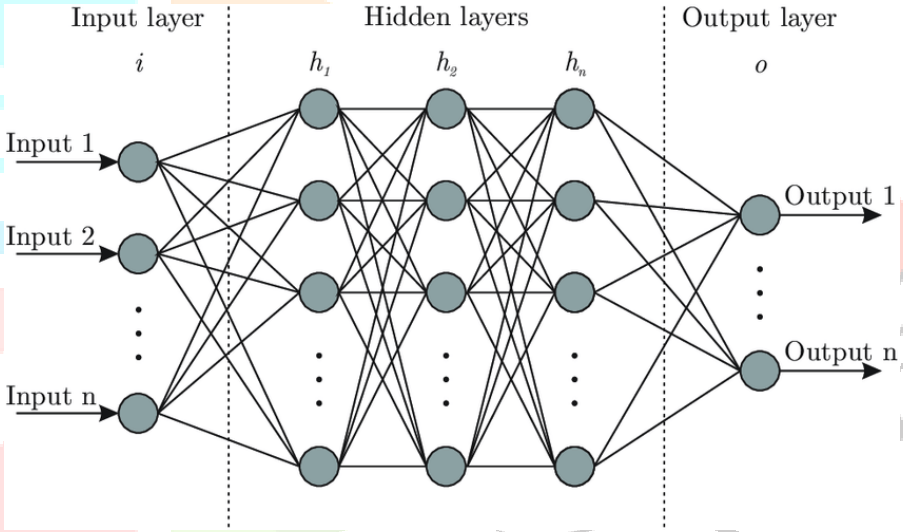
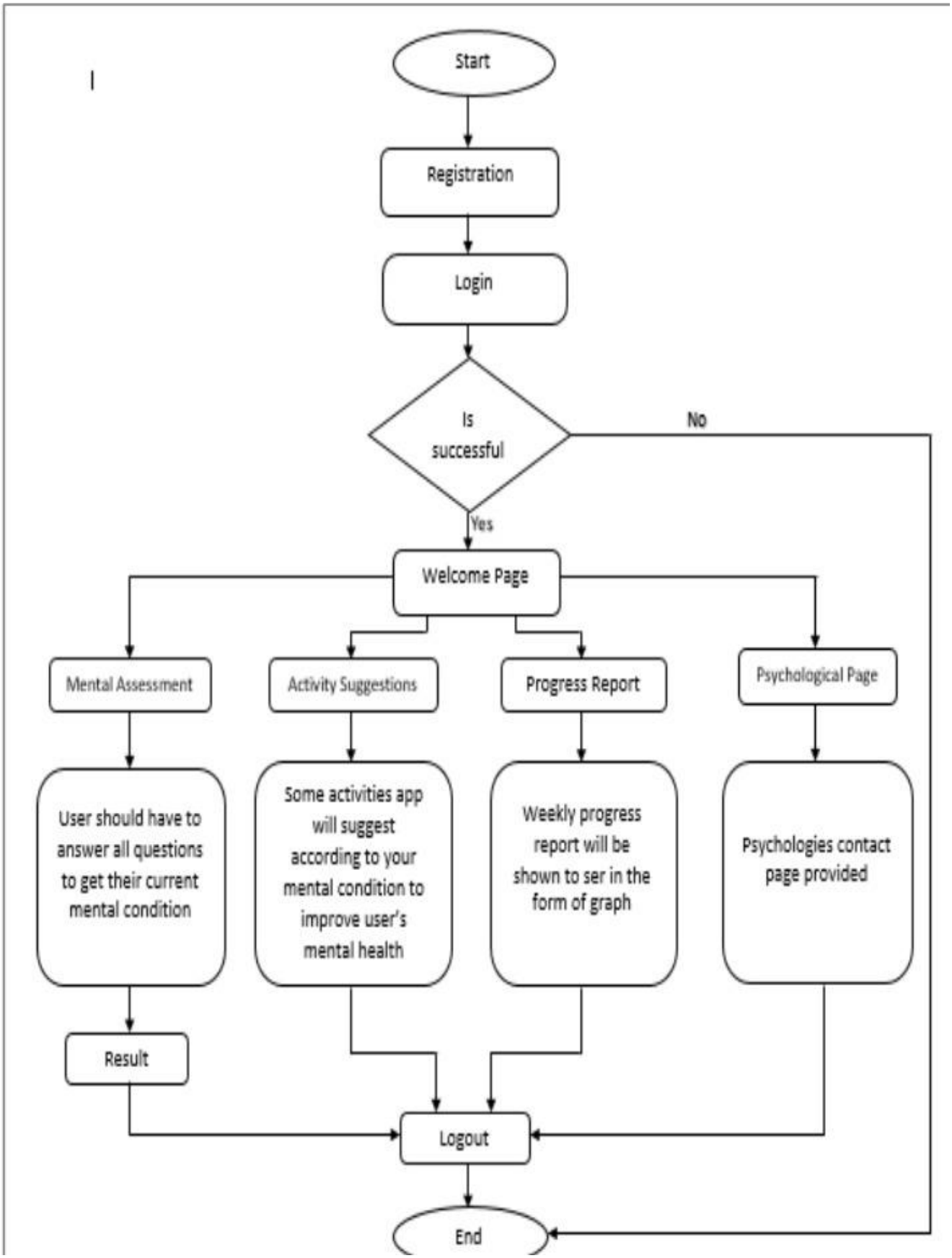


Fig6.2 ANN

VII. FLOW CHART



VIII. MODELLING

Mental health tracker website involves using historical data to make predictions or forecasts about future mental health outcomes. Here are some examples of predictive analysis that can be performed: Mood Prediction: Use machine learning algorithms, such as regression or time-series analysis, to predict users' future mood based on their historical mood data and other relevant variables. This can help users anticipate and prepare for potential mood changes, enabling them to take proactive steps to manage their mental well-being. Symptom Exacerbation Forecasting: Analyze historical symptom data along with contextual factors, such as sleep quality, stress levels, or medication adherence, to predict the likelihood of symptom exacerbation in the future. This can provide users with early warnings and allow them to take preventive measures or seek professional help if necessary. Goal Achievement Probability: Utilize predictive modeling techniques to assess the probability of users achieving their mental health goals based on their historical goal progress and other relevant factors. This can help users set realistic expectations, modify their goals if needed, or provide personalized recommendations to improve their chances of success. Personalized Intervention Recommendations: Apply machine learning algorithms to analyze user data and identify patterns that indicate the effectiveness of specific interventions or coping strategies for individuals with similar profiles. This can enable the website to provide personalized recommendations for interventions that are likely to be effective for specific users, enhancing their mental well-being. Treatment Response Prediction: Analyze the relationship between users' tracked data and their responses to specific treatments or interventions. This can help predict which users are likely to benefit from a particular treatment approach or identify factors that contribute to treatment success. This information can guide treatment planning and enhance personalized care. Risk Assessment: Develop predictive models to assess the risk of mental health challenges, such as depression or anxiety, based on users' tracked data, demographics, and other relevant factors. This can help identify individuals at higher risk and facilitate early intervention or targeted support. It is important to note that predictive analysis in mental health should be used cautiously and ethically. Predictive models should be regularly validated, and their limitations and uncertainties should be communicated transparently to users. Predictive analysis should not replace professional mental health services, but rather serve as a supportive tool to assist users and healthcare providers in making informed decisions about mental well-being.

IX. CONCLUSION

Mental health is an issue that is both delicate and vital at the moment. It is necessary for a healthy and balanced lifestyle. Mental health has an influence on one's thoughts, actions, and feelings. It can have an impact on a person's productivity and effectiveness. According to a WHO researches, depression will be a major cause ofmental disease throughout the world, and individuals must pay more attention to their mental health in orderto live a healthy social and professional life. Online predictors for outcomes can be used by those who are afraidto contact humans for diagnosis,"Mental Health Tracker" is a utility that lets in monitoring of mental fitness of user's. By accessing the inputs furnished with the aid of the affected person over a time duration with the aid of some questions. According tothe answer given with the aid of a person, a task and activity will be generated. As per the user's temper, a taskis assigned. A weekly graph will also be generated so that we can see our mental health growth through the useof this application.

X. REFERENCE

- https://www.irjmets.com/uploadedfiles/paper//issue_5_may_2022/24318/final/fin_irjmets1653666196.pdf
- https://onix-systems.com/blog/mental-health-app-development
- https://www.studocu.com/in/document/amity-university/wireless-body-area-networks-for-mental-health-care/1816413002-srs-lecture-notes-2/15832935