MUSIC THERAPY ANALYSIS.

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Abstract:

People with a higher rate of risk of diseases are very much common in human mankind. But these varieties of symptoms caused by the viruses can be very dangerous to the human community. As the majority of people's diseases increase in a month, a week, or in day-to-day life. As these symptom levels are growing and the people are very chaotic and hassel, they really don't know how to handle such situations. So, they can overcome these kinds of conditions. This paper will guide the patients to recover from diseases such as stress [8], diabetes attack as well as thyroid. This paper includes some steps i.e., Collection of data, recommendation, and prediction. Firstly, the Collection of user's data; after that, the test case paper will be generated. Following then, it will show the recommendation system in which there will be some listed songs i.e., classical songs through which the users can select [9][10]. Subsequently, the pop-up of the feedback will be shown. The feedback will be of two types, at the start, and at the end. And from this system, it will be flexible to cure the patient with the modality, facilitate symptom management, and also to promote wellness as well as to improve the quality of life of those who are suffering from mental or some related healthiness. So, it has been concluded that the classical music instrument has to be selected by the user which will give the recommended songs from the database to the user. Later on, they have to fill the feedback forum for further prediction.

Keywords: **A collection of classical songs, song database, real-time process, questionnaire form, user's feedback.**

1. INTRODUCTION

In today's time, the disease has become common in humans. But these diseases are dangerous to humans. As these disease levels are increasing with different mutants and to cure these diseases, patients go consult the doctor and take medicines from them and then the doctor advises them to eat the medicine on time. Because of such disease and tension or stress of something, they take time to recover. Because of this, many people exercise to keep their bodies healthy. Apart from exercise, they use music therapy which can also reduce body diseases such as diabetes, thyroid, blood pressure, etc. But many people are not very aware of Music Therapy. It helps to relax their mind as well as helps them to recover from chronic diseases, especially diabetes and pressure. Now we have seen how the user/patient listens to the music system after the user fills the questionnaire form which will be shown on the form pages. Users can choose their condition based on problems in the form-part. The patients will have to Sign Up and fill in their personal details, and in the core section, many fields will be available such as Name, Age, Gender, Problem of the patient. And on that system, there will be many problems present in the form of checkboxes. So, the patient or the user can select the query according to their problem.

After submitting the form, the user/patient will receive a verification code on their mail id or phone number. Then, the user will get access to the website and then the system will generate a case paper for the user. After that, the system should recommend classical music based on the problem from the database. The system will recommend the classical music at the current time and also provide the music based on swar chakra [10]. Musical instruments are mainly of many types but as this idea has the therapy based on classical music it has provided three types of instruments Flute, Santoor, and Sitar. The

recommendation system is worked on machine learning algorithms such as Collaborative filtering [4] as well as sentiment analysis algorithms [7]. Before listening to the song, the system will ask some questions and values to the user so that they can calculate the prediction. Majorly, it will depend on the user's heart rate, Pulse rate, BP, etc. [7]. After that, the user can listen to the music, and at the end of the session the user will fill in the feedback, and after the prediction module work which is based on the user's value as well as feedback. For Example, suppose a person has a thyroid, so thyroid basically affects the throat. As the therapy is applied to the throat hence according to the system swar-dha and chakra Vishudi will be applied [10]. So, the system will suggest the music of swar-Dha and the raaga whichever is there for that swar [10]. Here the project is providing the three types of musical instruments such as santoor, sitar, and flute. The user can listen to whichever they want. And also, one more thing is that the patients are taking time into consideration like every raaga has a certain time in that time only they can give a positive impact [9]. So, if the user wants to take therapy at night, then according to that system will recommend a raag which is based on real-time i.e., current time [9].

2. Problem Statement

To make a web application for the patients to overcome their stress or hypertension level, diabetes and thyroids also. As patients take many of the medications from their consulted doctors. And from those pills, they have to focus on their diet and exercise. As many people are not aware of Music Therapy, which will relax their minds as well as recover from chronic diseases. The web-app system will recommend classical music based on a questionnaire and it will generate the test-case paper for the user. After that, it will map the user's data according to the conditions based on the questionnaire and it will play the songs based on real-time. This system will do the data analysis by pre and post feedback through which it will predict the user's health improvement by using machine learning.

3. Motivation

Many people do not know about music therapy. But, there are only a few people who understand it and have the perfect knowledge to listen to the songs in their particular mood, but what about the people who don't know… How music therapy can be beneficial to them. We are selecting this Music Therapy project because it will help to build up the motivation and confidence of patients. They can fully cooperate with the overall treatment throughout the session. And also to the people suffering from anxiety issues, diabetes issues, and High Blood Pressure. Because of spoof news, people are getting scared which results in anxiety and hypertension also. Hence, by applying music therapy they'll be able to motivate themselves after listening to the music. Through this system, we can promote music therapy and relieve their stress.

4. Literature Review

This is in many cases the contextual investigation on which there is a director of music treatment on various individuals of different ages, on various timings, by utilizing different ragas and estimating the tension level worth that is broken down during this paper in [1]. Moreover, the effect of music treatment on youngsters with chemical imbalance is talked about, as well as how robots are utilized to help music treatment meetings, which is additionally made sense of through contextual analysis. The reason for

this paper is to exhibit and convince that music treatment can really supplant meds used to lessen pressure and fix the mental imbalance, as well as to show that music treatment can abbreviate recuperation time.

This paper [2] investigated further into effect of music on dental anxiety during ultrasonic scaling. Twenty-six patients were experiencing dental anxiety during scaling therapy, and their Electrocardiogram (ECG) data were gathered after they were randomly assigned to an experimental or a bearing group. Statistical testing revealed that six ECG characteristics differed significantly between the experimental and, thus, the control groups.

According to [3], hypertension is a prevalent clinical condition that has a major threat to human health. Many clinical studies have stated that specific types of music can help to lower blood pressure, and now music therapy is also considered an important aspect of anti-hypertensive treatment. Our previous research paper is integrated into the new MP3 player, which may detect such BP value utilizing a Cuffless measurement approach as well. The MP3 player chooses various types of music to listen which is based on the BP measurement, in order to activate the hypertension of patients.

In [4] the article states that music therapy researchers and clinicians have discussed what they've learned on collaborative research projects with healthcare providers in community settings. In practical aspects of conducting research on sites are music therapists, healthcare professionals, and administrators which are consulted early in the research planning process; research team members are integrated with community healthcare providers and strategies for successful study. Thus, implementation is explored.

According to [5,] the health sector has seen a significant transformation as a result of the development of new computer technology, which has driven this sector to produce more medical data, resulting in the emergence of different fields of research. Many attempts are made with the medical data team on the one hand, and all those useful knowledge is gathered on the other. We will offer an overview of the emergence of big data in the healthcare sector and use a learning algorithm to analyze a set of medical data in this presentation. The goal is to use the Decision Tree (C4.5) algorithm to forecast chronic renal disease.

The Ragas had already altered the human emotions have been changed by changing the resonance of the human body, according to ancient Indian classical musical maestros [6]. Some ragas, including Darbari, Kanada, Khamaj, and Pooriya, have been found to assist relieve mental strain, especially in the case of hypertension. Raga Jaivanti has also been found successful in curing mental diseases and soothing the mind, and Raga Malhar calms anger, excessive mental, excitement, and mental instability [12]. Nonetheless, systematic verification of the raga association is required. No schemes have yet been demonstrated, according to the survey. In light of the foregoing explanation, the suggested research in this paper aims to learn more about the science of raga phonetics and its impacts on nerves.

5. Project Implementation Technique

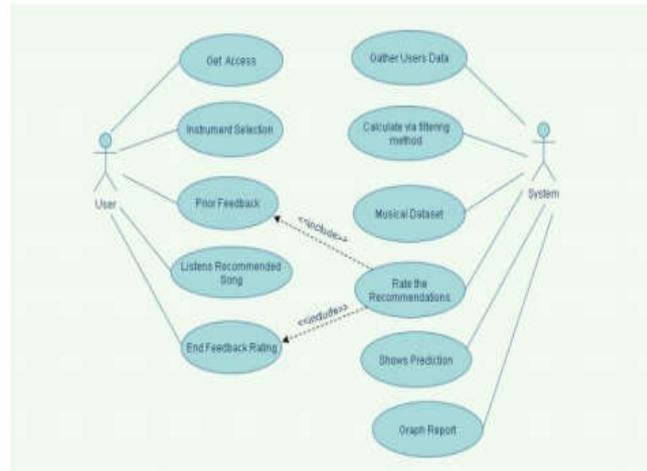The Use-case diagram of the system shows the overall flow of the system.

Figure 1: Use Case Diagram of the system

The system must:

• Gather User's data.

• Calculate via filtering method.

• Used musical dataset.

• Suggest the music

• Take the ratings from the user.

• Show prediction.

The actor user will:

• Get access to their profile.

• Select the Instrument of their own choice.

• Give the prior feedback.

• Listen to the Music.

• End feedback basically gives the ratings.

As this use-case tells us the overall roles of the actor and the system. By this, it'll be a little bit difficult to understand the flow of the website.

As the workflow of the website is very simple and it'll be able to use by an uneducated people, which is also the main problem for the elder citizen of the country. Because 50-60 years ago, there was no awareness given for the education and also there were facilities for the education by that, they can grasp the opportunity as per their need or for their need. So, senior citizens of the country are not much educated or maybe not much educated that's the reason we have created a simple and uncomplicated forum.

As the flow is easy to understand and also its well-functioned for every kind of user. The flow is given below:
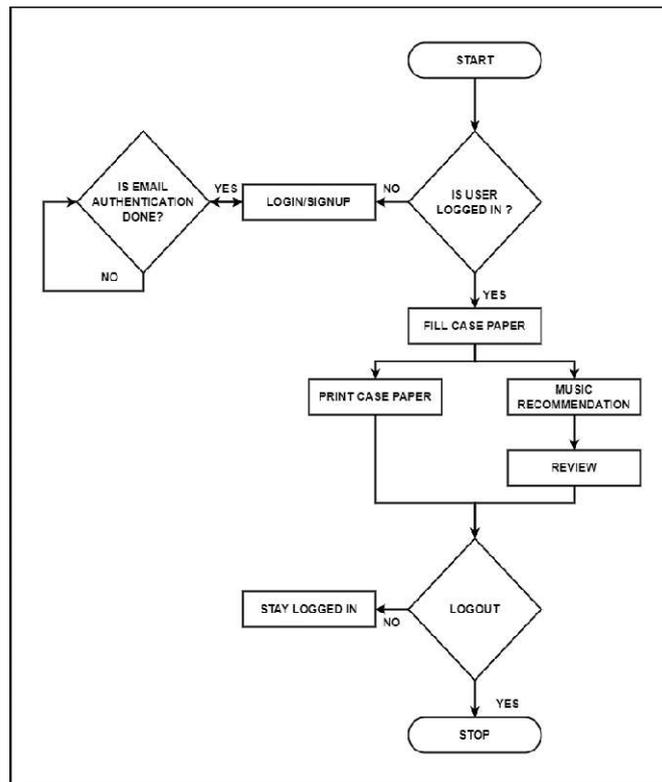
Figure 1.2: Flow diagram of the system

Firstly, the patients will go on the website then the patient will Sign Up and fill in their personal details, and on the core section, many fields will be available such as Name, Age, Gender, Mail-id, Phone number, Problem of the patient. And on that system, there will be many problems present in the form of checkboxes. So, the patient or the user selects the query according to their problems, after submitting the form, the user/patient will receive a verification code on their mail id or phone number.
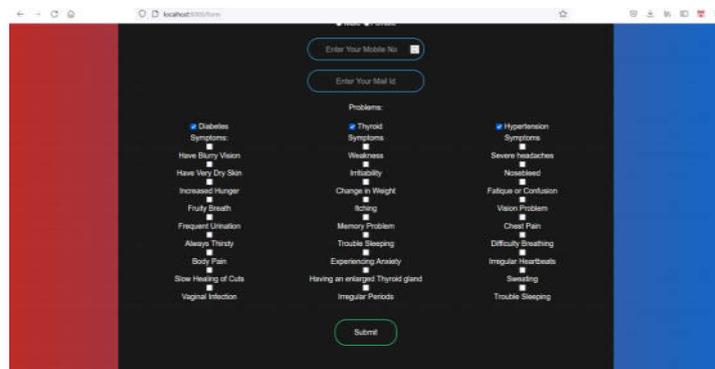
Figure 1.3: Register form

Then, the user will get access to the website then the system should generate a case paper for the user. After that, the system should recommend classical music based on their problem. The system will recommend classical music according to the current time and it provides music based on swara-chakra also. The system mainly gives Classical music based on the instruments: Flute, Santoor, Sitar.

The recommendation system is worked on machine learning algorithms such as Collaborative filtering [4] as well as the Sentiment analysis algorithm. Before listening to the song, the system will ask some questions and values to the user, which will be dependent on heart rate, Pulse rate, BP etc. After that user listen the music and after that song finished then user will fill the feedback and after that prediction module work which

based on user value as well as feedback rating and previous review. Following are the module's used:

I.   Collaborative Filtering
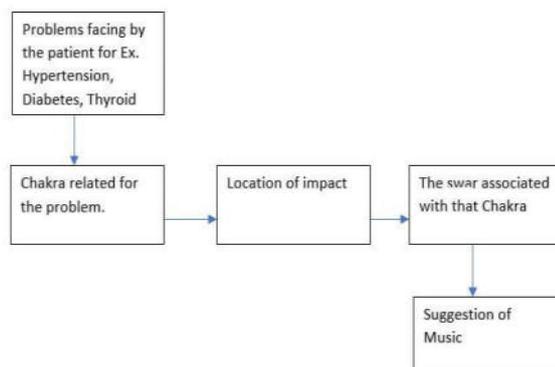
Figure 1.1: Flowchart of Collaborative Filtering

The process of picking a tiny section of your data and employing that subset view or analysis is known as data filtering. Sorting is usually (but not always) a transitory process in which a complete set of data is saved but just a portion of it is used for calculation [4].

Filters can be used to:

• View results over a specific time period.

• Make a tally of the results for each interest group.

• Remove any "poor" or "erroneous" views from the analysis.

• Develop and test statistical models.

Data is filtered via interactions with system-collected data from other users in collaborative filtering [11]. Based on the premise that people who have previously agreed on an appraisal of something are more likely to agree again in the future. The concept is simple: when we're looking for a new movie to watch, we frequently ask our friends for recommendations. We, of course, rely largely on referrals from people who share our love. The link between users and objects is the subject of collaborative filtering tools. Disease/problem, chakra, swar, raag files, time period, and other factors are included in the system's dataset. Patients will enter the difficulty they are having into this system. The problem and chakras associated with the problem will be mapped by the system. The chakra is basically associated with some swar and the swar contains a number of raag with different time intervals. The system will suggest a raag based on the chakra and swar itself. Filtering is also based on the current time of the system. Suppose the user/patient login into the system at 2.00 pm then the system will suggest the raag which will give impact at that time. Likewise, if a user uses the system at 8.00 pm then the system will suggest a different raag. The raag can be in the form of Flute, Santoor, and Sitar. Patients can choose and listen based on their choice [4].

The following charts show the swar chakra mapping [10]:
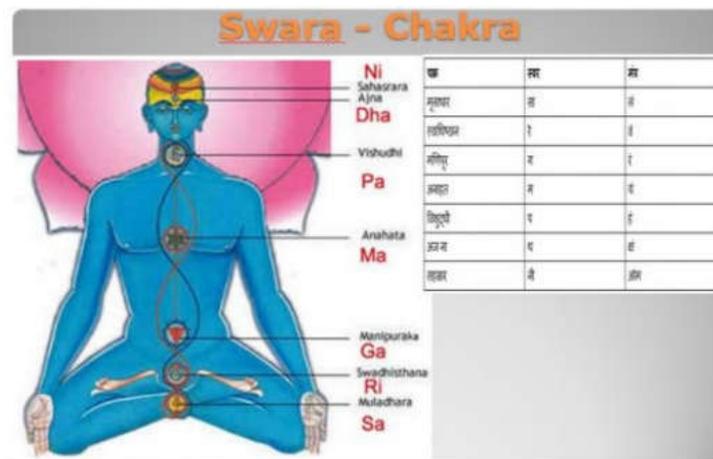
Table 1.2: Swar Chakra Mapping - I

Table 1.3: Swar Chakra Mapping - II

Henceforth, here it will end-up with the collaborative part.

II.   Recommendation based on Reviews

One of the machine learning algorithms is sentiment analysis [7]. It is used to examine the user's reaction and feelings. It is usually an examination of one's positive and negative emotions.

A. Datasets

Many assessments and tagged sentiment datasets, particularly for Twitter posts and Amazon product reviews, have been developed. This is how the system will handle user feedback.

B. Pre-processing

Pre-processing is the first stage in text and sentiment classification. To minimize text noise, reduce dimensionality, and aid in the enhancement of classification performance, a substantial amount of technology is used to data. Remove digits, punctuations, lowercase, and remove stop words are among the most prevalent ways.

C. Machine Learning

This method uses a machine-learning algorithm and a variety of features to create a classifier that can recognize sentimental text. For example, suppose two employees work

in a company, one of them makes a mistake in his work, causing his boss to become enraged, and the other of whom is similarly enraged but unable to express himself. On the other side, the second employee has done a good job, and Bose compliments him, making the second worker pleased. As a result, the sentiment algorithm assesses their attitude, determining that one is angry and the other is joyful. Before listening to the song, the user fills out a value that has a number of questions and rating-type questions. After submitting the value, the data store and after that when the music ends then feedback form appears and the user should fill-in the feedback and many questions related to rating and values and the data store does store. So, both rating and value are compared by the system, then users use this system next time then the recommendation system works in this step on the basis of their previous review.
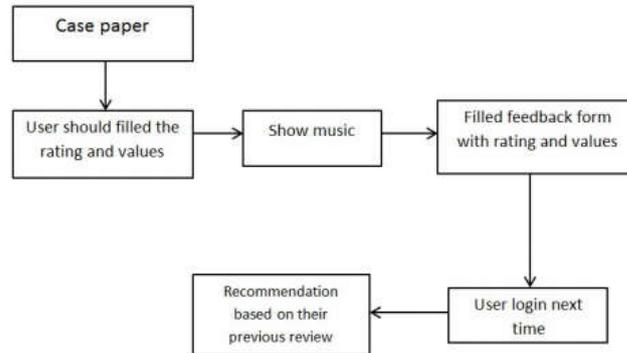

Figure 2.1: Flowchart of Recommendation

III.   Prediction of improvement

When the system reaches the prediction stage, it will download the user's data in order to provide feedback, which is the most important aspect of the prediction. However, the feedback will appear as a pop-up. The user's prior-session inquiry feedback and end-session rating feedback are stored here. The training set will be compared first, according to the model. It will then be transformed into a trained dataset using those pre-trained values. The training dataset will be evaluated by the classifier, which will display the user's graph. And that graph will reflect how far the user has progressed. The system can also have a probability, such as whether the user is entering inaccurate information, in which case the incorrect values will form a new classifier and a graph will be plotted
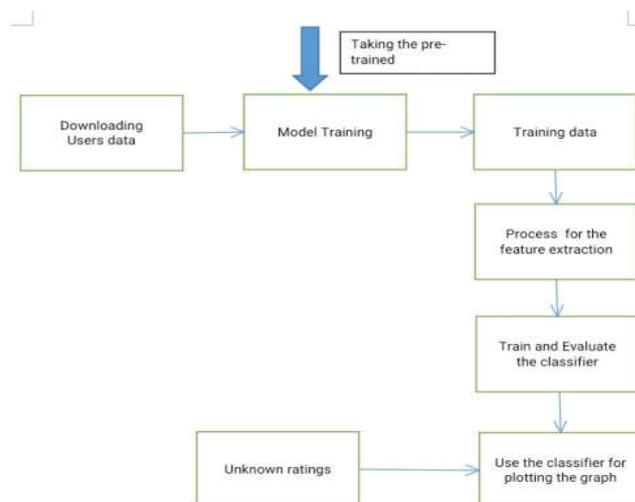

Figure 3.1: Flowchart of Prediction Module

As the system takes the feedback of the user, then user can log-out from the portal.

Every-time, when the user clicks on the portal or website of the system. He/ She will get the analytics based on their view of choices. So, if they are searching for something like this or about to search for this website, then it'll show on the user's page at the top.

6. Results and Discussion

We looked at a number of research papers and found that they all agreed that music therapy is the greatest treatment for reducing sickness. It has used the same therapy in this case as well, but instead of using pop or rock music, it has used classical music instead. As this is the most effective treatment for reducing disease. In addition, the therapy is tailored to the present time and sessions. As a result, stress [8] or other illnesses will be minimized, and a user's health will return to normal, according to doctors.

7. Summary and Conclusion

Briefing the overall thesis, if a person is having a problem with hypertension or any kind of thyroid or some sort of diabetes. Then that kind of patient will be the main targeted user. The main purpose of the system is to focus on the targeted patients. As the user uses the system they have to first go through the verification and authentication section. Soon the client will get verified from mail-id or mobile number and not only the user will get access to the system but also, they'll be receiving a test case. And from then it will recommend the song to the user where he or she will listen to the music. Well, the system also has one beneficial factor that is, the user can choose the instruments on their basis. Soon the patient clicks on the recommended song and there will be a pop-up page. In which they will have to put their heart rate, pulse rate, glucose, etc., after submitting the prior feedback the user can listen to the song. And at the end, once again there will be one ending feedback. Where the user has to put their exact ratings and from then it will compare them for the further result. Thus, the result will show the graph of the patient in which it will show the difference in the health care. This device is very much beneficial and helpful to the patients. Like, where it was an article which had a presumed fiction, now has become a reality because of the technologies used by machine learning. This system will help the user to recover and tends to attract them towards the classical folks. As we have divided our project into some of the small modules. Where we have done the implementation with those modules such as collaborative filtering based on real-time, recommendation according to the patient's disease and prediction report based on the feedback. And after logging-out of the system, the analysis is based on the clicking of the portal in n number of times. Which will show on the top of the searches. Real time testing will be possible to make our device to function more accurately and more feasibility.

8. Acknowledgement

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