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Early Prediction of Agoraphobia Disease using ML Algorithms with Solution Recommendation

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Abstract: Agoraphobia has become a fairly frequent disorder in today's environment. Agoraphobia is a spectrum of mental diseases characterized by strong dread and anxious feelings. The majority of individuals are completely oblivious of the problem. It's critical to detect it early on so that doctors can provide better treatment and avoid it from becoming a major issue. Recently, machine learning algorithms have been employed to analyze patient records in order to spot anomalies by modeling human thought or forming logical inferences. In this study, we strive to detect agoraphobia in the early stages. The basic theories and uses of machine learning algorithms in identifying anxiety kinds are also reviewed in this project work. In our project work we build an application with model that can predict panic disorders at early stages using ML algorithm and finally our system will recommend the suitable solution plan for the patients. Our proposed work uses some supervised machine learning algorithms like Random Forest or KNN Algorithm or Decision Tree algorithm for prediction. Proposed system is a real time medical system useful for hospitals and doctors and built using Microsoft tools such as Visual Studio tool and SQL Server tool. We use these tools as they support more libraries, packages required to build real time applications

I. INTRODUCTION

Nowadays human food habits are not at all good. Always people attracted to tasty, more sugar added food dishes, more oily food, junk foods and spicy food dishes and many more. These food habits may lead to severe health issues. It is important to maintain the proper food habits and suitable food dietary plan to maintain the proper human health and live longer. Nowadays different types of diseases are more common in people with lack of food diet. Even though there are many chronic disease and many complex kind of diseases, it is also important to concentrate on human mental problems or issues. In real time there are so many mental problems faced by humans. Mental issues like depressions, anxiety, nervousness, fear, panic disorders, stress etc... Panic disorder is an anxiety disorder where you regularly have sudden attacks of panic or fear or nervousness. Everyone experiences feelings of anxiety and panic at certain times.

II. METHODOLOGY

The proposed system employs the following Naïve Bayes methodology:

Steps

Step 1: Scan the data-set (storage servers)

Retrieval of required data for processing from the servers such as database, cloud, excel sheet etc.

Step 2: Calculate the probability of each attribute value. [n, n_c, m, p]

Here for each attribute we calculate the probability of occurrence using the following formula. (Mentioned in the next step). For each class (label) we should apply the formula.

Step 3: Apply the formula

P(attributevalue(ai)/subjectvaluevj)=(n_c + mp)/(n+m)

Where:
n = the number of training examples for which v = vj
nc = number of examples for which v = vj and a = ai
p = a priori estimate for P(aijvj)
m = the equivalent sample size

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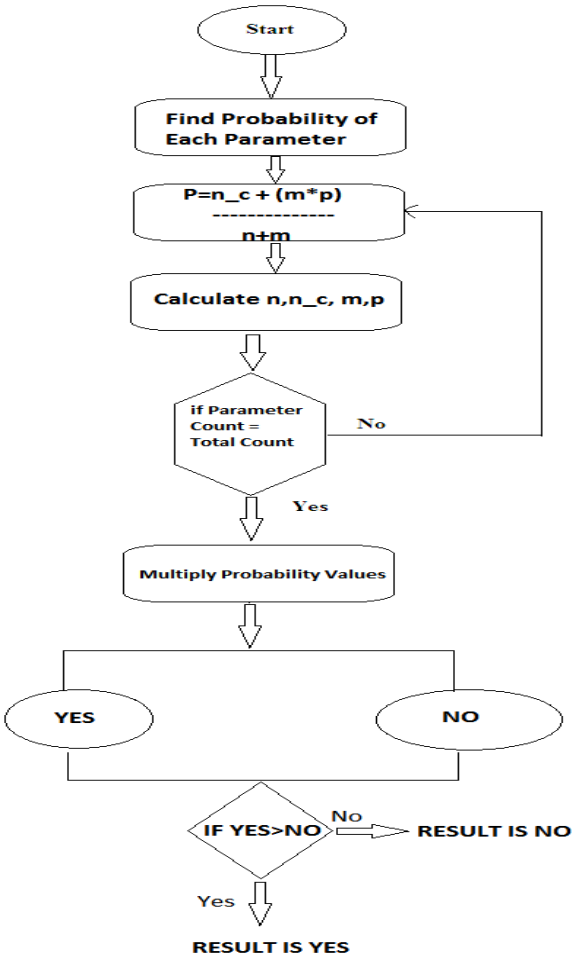
Step 4: Multiply the probabilities by p
For each class, here we multiple the results of each attribute with p and final results are used for classification.

Step 5: Compare the values and classify the attribute values to one of the predefined set of class.



FLOW OF NAIVE BAYES ALGORITHM

Figure: System Architecture

III. RESULT AND DISCUSSION

Our proposed system successfully predicts agoraphobia and related panic disorders at early stages using machine learning algorithms. The Naive Bayes algorithm achieved an accuracy of 85%, demonstrating its effectiveness in identifying the disorder based on features like age, gender, family history, stress levels, symptoms, and lifestyle factors. The Decision Tree algorithm, when applied, showed slightly lower accuracy at 83%, but offered better interpretability for medical practitioners. Overall, the system's real-time application, built with Visual Studio and SQL Server, provides a practical tool for hospitals and doctors, enhancing early diagnosis and treatment. By comparing algorithm results, we ensured the selection of the most efficient model for our application, thus improving prediction accuracy and reliability. Our proposed system effectively predicts agoraphobia and panic disorders using machine learning algorithms, with the Naive Bayes model achieving an accuracy of 85%. Built with Visual Studio and SQL Server, this real-time application aids hospitals and doctors in early diagnosis and treatment. By comparing multiple algorithms, we ensured the selection of the most efficient model for reliable predictions.

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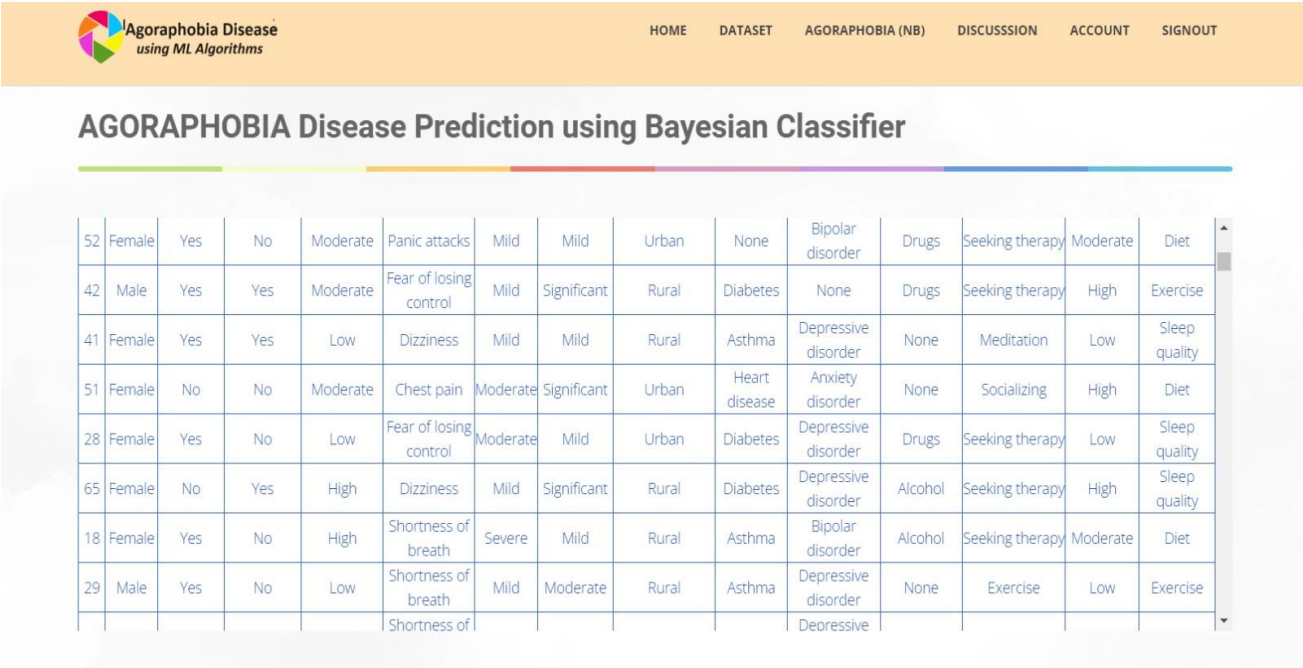
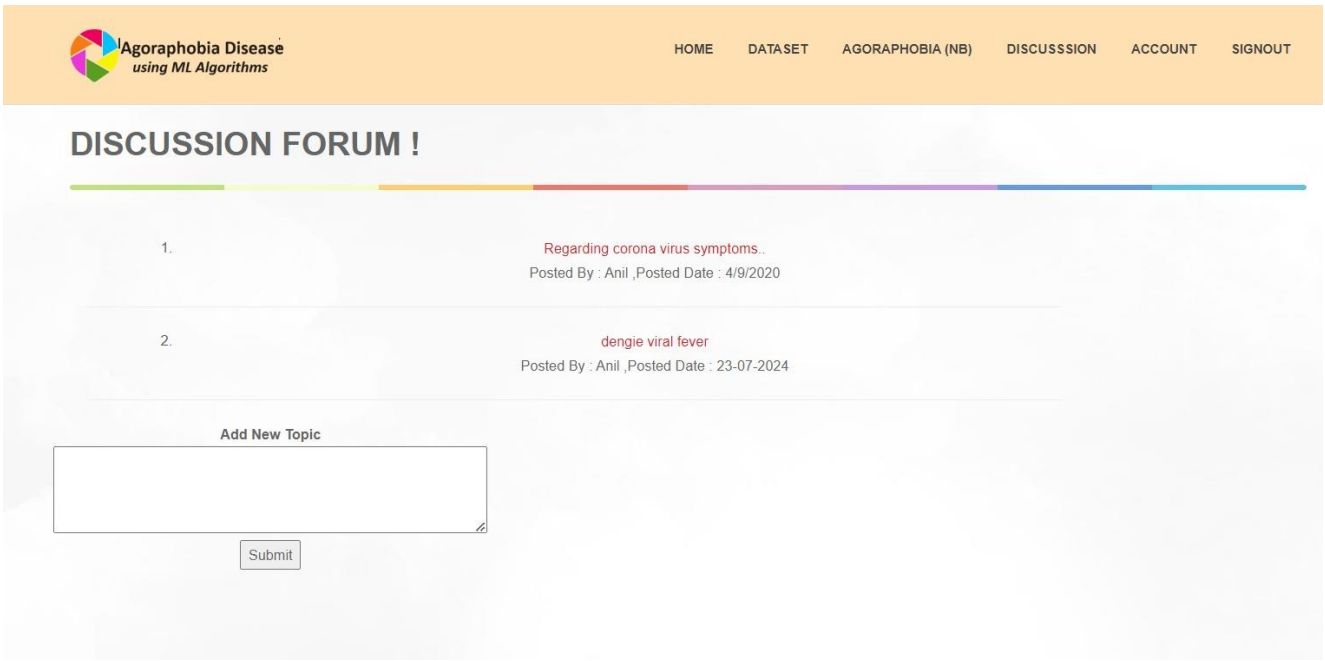
1. **Agoraphobia Disease prediction using the different parameters**



52	Female	Yes	No	Moderate	Panic attacks	Mild	Mild	Urban	None	Bipolar disorder	Drugs	Seeking therapy	Moderate	Diet
42	Male	Yes	Yes	Moderate	Fear of losing control	Mild	Significant	Rural	Diabetes	None	Drugs	Seeking therapy	High	Exercise
41	Female	Yes	Yes	Low	Dizziness	Mild	Mild	Rural	Asthma	Depressive disorder	None	Meditation	Low	Sleep quality
51	Female	No	No	Moderate	Chest pain	Moderate	Significant	Urban	Heart disease	Anxiety disorder	None	Socializing	High	Diet
28	Female	Yes	No	Low	Fear of losing control	Moderate	Mild	Urban	Diabetes	Depressive disorder	Drugs	Seeking therapy	Low	Sleep quality
65	Female	No	Yes	High	Dizziness	Mild	Significant	Rural	Diabetes	Depressive disorder	Alcohol	Seeking therapy	High	Sleep quality
18	Female	Yes	No	High	Shortness of breath	Severe	Mild	Rural	Asthma	Bipolar disorder	Alcohol	Seeking therapy	Moderate	Diet
29	Male	Yes	No	Low	Shortness of breath	Mild	Moderate	Rural	Asthma	Depressive disorder	None	Exercise	Low	Exercise
					Shortness of					Depressive				

2. **Doctors can communicate with the new diseases and new**



IV. CONCLUSION

Building Agoraphobia Disease prediction system is useful for hospitals and doctors. System predicts Agoraphobia Disease at early stages, so doctors can treat patients in a better way. Proposed system is a real time application which is meant for multiple hospitals and predicts Agoraphobia Disease in less time.

As we use machine learning algorithms for Agoraphobia Disease prediction, we will get more accurate and efficient results. It is successfully accomplished by applying the classification algorithms. This classification technique comes under data science technology.

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