



SUGGESTING BEST TYPE OF MEDICINE FOR HEALTH CARE SYSTEM

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Abstract: Suggesting the best type of medicine for Health Care System is a system that uses a Logistic Regression algorithm to predict diseases based on information provided by the user and then suggests the best treatment for the diseases predicted. It also anticipates the patients or user's ailment based on the knowledge or symptoms entered into the system, and offer correct results based on that information. If the patient isn't in any danger, and the user simply wants to know what kind of ailment he or she is suffering from. The health industry now plays a major role in curing the diseases of patients, so by simply entering the symptoms and other relevant information, the user can gain a better understanding of the disease to which he or she is subjected, and thus the health industry can benefit from this technique by simply asking the user for their symptoms and entering them into the system, and in a matter of seconds, they can gain a better understanding of the disease to which they are subjected.

Index Terms - Machine Learning, Logistic Regression, Health Care System

I. INTRODUCTION

In today's health-care industry, there are a variety of issues with machines or devices that can produce incorrect or unacceptable results. To avoid these outcomes and obtain the correct and desired outcomes, we're developing a program or project that will provide accurate predictions based on information provided by the user as well as datasets available in the machine. We're using machine learning to keep track of all of the hospital's data. Machine learning is a type of artificial intelligence that allows you to create models that evaluate data quickly and give findings quickly. [8] The health industry is still lacking in information and expertise, despite the fact that it is a large enterprise with a lot of work to do. So, with the help of all of those algorithms, strategies, and approaches, we've created a project that can assist individuals in need. So the issue here is that many people go to hospitals or clinics to find out how their health is and how much they are improving in the given days, but they have to travel to get their answers, and sometimes the patients may or may not get the results based on various factors such as the doctor being on leave or having a family emergency, so he won't have come to the hospital, and a variety of other reasons. So, in order to avoid all of these reasons and confusion, we are working on a project that will assist all those people and patients who are trying to figure out their health status. Sometimes, if a person has been observing a few symptoms but is unsure of the disease he or she is dealing with, this can lead to a variety of diseases in the future. So, in order to avoid this and to comprehend the disease in its early stages of symptoms, this disease prediction will be extremely beneficial to a wide range of individuals, including children, adults, and elderly citizens.

The Health Care System project was created to combat general disease at an earlier stage. As we all know, in the competitive environment of economic development, mankind has become so engrossed that it has forgotten about its health. According to research, 40% of people ignore general disease, which leads to harmful disease later. We're using machine learning to keep track of all of the hospital's data. Machine learning technology allows doctors to make better decisions for patient diagnoses and treatment options by allowing them to build models that can quickly analyze data and deliver results. As a result of using machine learning technology, doctors can make better decisions for patient diagnoses and treatment options, resulting in improved patient healthcare services. [6] The most common cause of ignorance is a lack of willingness to contact a doctor and a concern for time. People have become so engrossed in their daily lives that they have little time to schedule an appointment and consult a doctor, which leads to fatal sickness.

II. FEATURES OF PROPOSED WORK

- Using datasets, this project will detect the diseases of patients based on their symptoms and other basic information.
- This is done with the help of prior medical datasets, which can provide up to 80% correct results after comparison, and the project will continue to improve in order to achieve 100% accuracy.
- With the help of Disease prediction, it predicts the disease of the patient and tries to solve their problems, and prevents from the aspects.
- It doesn't provide security for the system because the users don't have that much patience to login to the system while they are suffering in severe condition.
- The disease is predicted using algorithms, thus from a drop-down menu, the user has to select symptoms and the user must select all symptoms to ensure perfect accuracy.
- Here we can easily prepare the data and transform that data into an algorithm, which will reduce the overall work of the project.
- To make users more application friendly rather than discussing with others for their disease.
- Here the user has to register first, to use the prediction, and then log in to the system using the credentials such as username and password.

III. EXISTING SYSTEM

Prediction using traditional methods and models involves various risk factors and it consists of varied measures of algorithms like datasets, programs, and far more to feature on. It is the use of computing and communication technologies to improve health information science by collecting, storing, and retrieving data efficiently. [2] But these models are only valuable in clinical situations and not in the big industry sector. A lot of labor has been done already in making models which will predict whether a patient is probably going to develop heart condition or not. [3] So, we have used the concepts of machine learning and supervised learning methods to build the predictions system. We will work on Selective nave Bayes classifier in the future to improve the performance of the classifier; it is well known that Nave Bayesian classifiers perform well (NB). [1]

It looks at unstructured and structured data in the healthcare area to assess the risk of sickness to tackle these challenges. [5] The accuracy rate may be increased to 89.80 by integrating unstructured and structured data. [4]

IV. SYSTEM ARCHITECTURE

The project Health Care System for Suggesting Best Type of Medicine is completely user friendly, so that the user can directly enter into the system without login or register. Initially it asks the user to give the symptom as an input that they are suffering from. For entering symptoms, it will give the drop down list of symptoms fetched from the dataset, so that user can easily select the symptoms from the list. Then it will compare the list of symptoms entered by user with the dataset. Then it will predict the disease related to the symptoms using machine learning algorithm.

Here I have used the Logistic regression algorithm. Then if the use asks for the treatment, the system will suggest what type of medicine is best for predicted disease on the basis of number of users, which I was gathered from the real time users. After that the user can get details about the disease which is predicted and also this system will get navigation to the online portal Health Mug, where we can buy any type of medicine like Ayurveda, Allopathic and Homeopathy.

V. DATASET DESCRIPTION

All the symptoms are extracted and a dictionary is created with key as disease and symptoms as value. Further, each disease is treated as the label and all symptoms are treated as specific attributes or columns. Figure 1 shows the systematic flow of steps involved in data scraping. The scraping script fetches over 261 different diseases that form the label and 489 symptoms.

The symptoms are then pre-processed to remove similar symptoms with different names (For example, headache and pain in the forehead). This is done by finding the synonyms for each symptom and computing the Jacquard Coefficient for pairs of symptoms. If the score is greater than the threshold, both the symptoms are very similar and one of them can be removed.

To multiply the dataset, each disease's symptoms are picked up combinations of the symptoms are created and added as new rows in the dataset. For example, a disease A, having 5 symptoms, now has a total of $(2^5 - 1)$ entries in the dataset. The dataset, after preprocessing and multiplication, contains around 8835 rows with 489 unique symptoms.

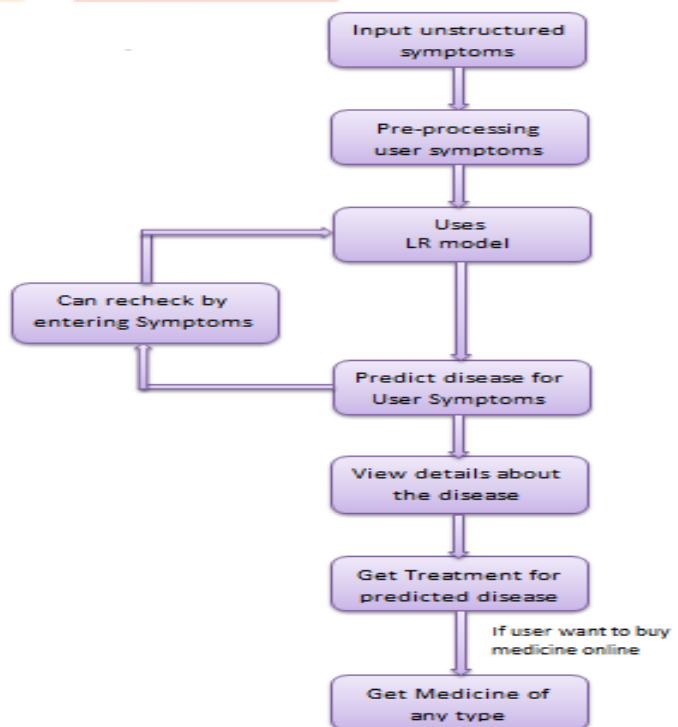


Fig1 Proposed System Architecture

VI. ALGORITHM

In its most basic form, logistic regression is a statistical model that uses a logistic function to model a binary variable. The parameters of a logistic model with a dependent variable with two possible values are estimated using logistic regression. It has used multinomial logistic regression which is one of the classification algorithms because it groups the symptoms to match with disease of that inputted symptoms. [7]

Types of Logistic Regression

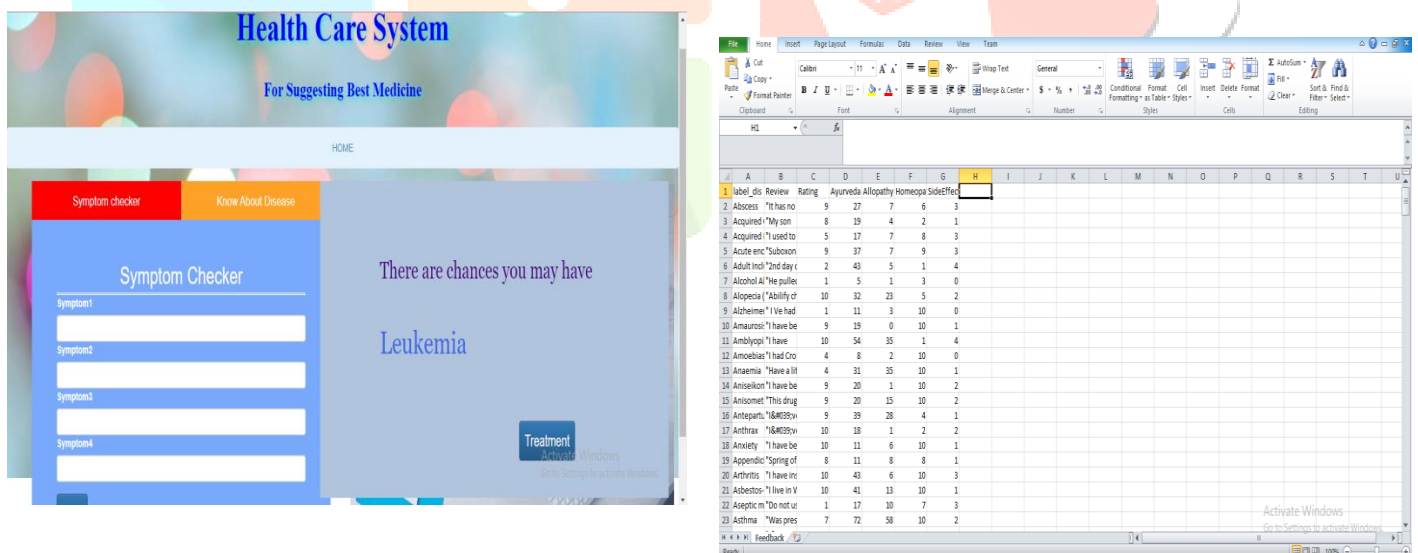
- Binary Logistic Regression (BLR): There are only two possible outcomes for a specific answer.
Example: Is it Spam or Not?
- Multinomial Logistic Regression (MLR): Regression with more than three categories but no order.
Example: Predicting which foodstuffs are ordered the most is an example (Veg, Non-Veg, Vegan)
- Ordinal Logistic Regression (OLR): -Ordering of three or more categories.
Example: For instance, a movie's rating ranges from one to five stars

VII. EXPERIMENTAL RESULT

1. Dataset

These dataset are used in the project for suggesting best medicine type. It is in CSV format and it contains 262 diseases and number of users for each type Ayurveda, Allopathic, and Homeopathic.

Fig 2 Treatment data



2. Predict Disease

This was disease prediction page. Here disease will be predicted for the user input symptoms

Fig 3 Disease Prediction

3. Treatment

This system will suggest the best medicine type among Ayurveda, Allopathic, and Homeopathy for predicted disease.

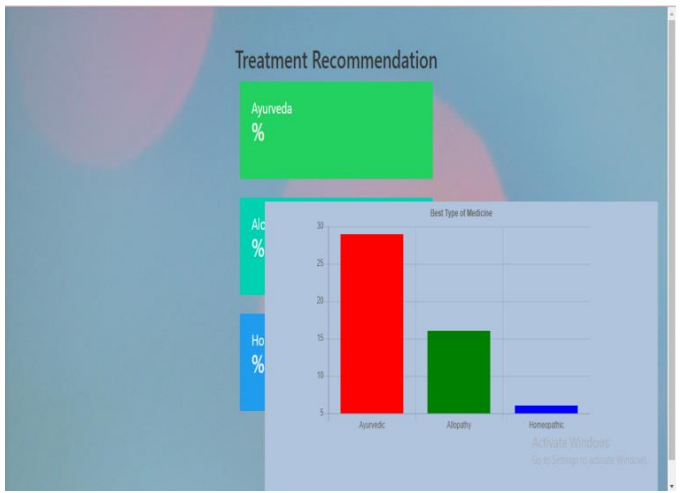


Fig 4 Treatment

4. Chart view

The treatment recommended is displayed in a bar chart view.

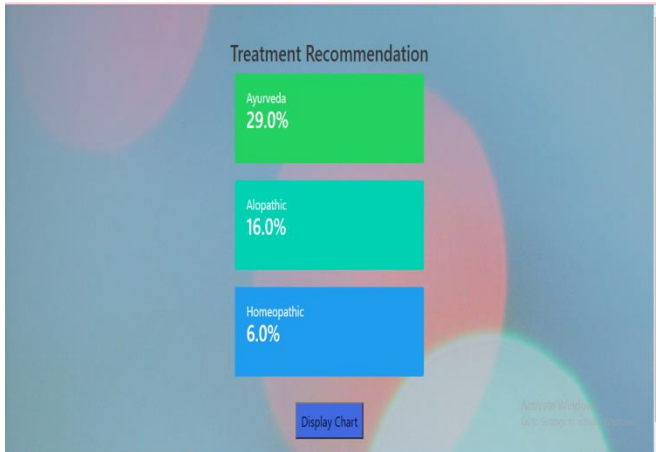


Fig 5 Chart view

5. Disease Details

The user can view the details about the disease which was predicted for they can view details of any other diseases.



Fig 6 Disease Details

6. Buy Medicine

If the user wishes to buy the medicine for diseases they can buy medicine of any type for online portal called Health Mug.

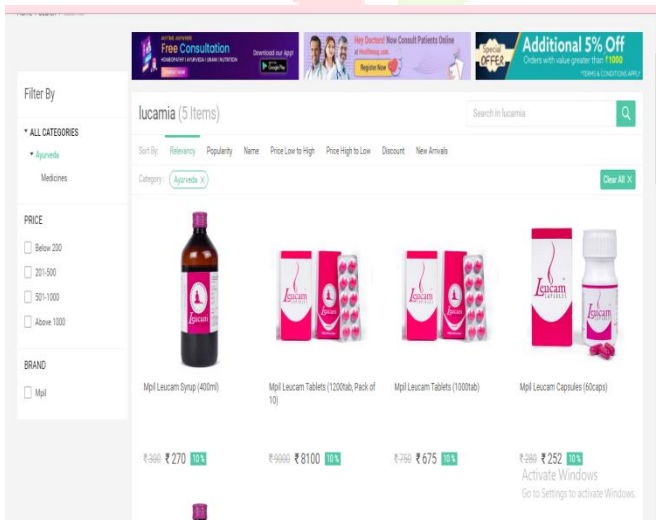


Fig 7 Online portal

VIII. Conclusion

Let's conclude by saying that this project Suggest Best Type of Medicine is extremely useful for everyone, but it is especially important for the healthcare industry because they are the ones who use these systems every day to predict diseases of patients based on their general information and the symptoms that they have experienced throughout their lifetimes.

When it comes to prescribing the right treatment for the right illness, it's a great tool to use. As a result, any user can use this system to predict problems and receive recommendations for the optimal pharmaceutical kind.

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