

Liver Disease Diagnosis System Using Machine Learning

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Abstract:- Implement an android based health care system for diagnosing liver related diseases .Focus on the identification or prediction of the liver disease based on the classification of various symptoms and observations. The term diagnosis refers to the determination of the nature of the cause of a disease. Liver is a vital organ which carries out more than 500 roles in the human body. It is the only organ that can regenerate. This system works by using machine learning techniques. The system classifies various symptoms of liver related diseases using a machine learning algorithm and reaches a conclusion. The system also provides necessary advice to the users based on the type of illness.

Keywords:- Android, Machine Learning, Liver Disease.

I. INTRODUCTION

Nowadays, when someone suffers from a disease, then the patient has to go to the doctor, as it is costly and time consuming process .Suppose hospital and doctor is more far away from the patient, it is tougher for the person to diagnose the disease. So the above issue can be solved using our automated disease diagnosis system, he or she can save time and money. Plenty of Liver disease diagnosis prediction systems are implemented using data mining techniques that are used to measure the present condition of the patient. We are introducing android based app that predict the patients disease based on the given symptoms. The trained dataset is collected from authorized health centers and from related web sites. By using our application the user will be able to diagnose the disease by entering their symptoms.

As the internet usage is emerging each day, people are curious to know different new things. People always refer to the web if there arises any queries. People like to access applications than hospitals and doctors. So there arises the importance of our system in the real world.

II. BACKGROUND

In today's busy and modern world, we do not have enough time for anything. And sometimes, not even to visit a doctor. Many people, especially the busy working class, do not take their health as a serious concern. They treat themselves by referring to the internet , and taking the

medicines they find suitable for their problem But this method ,in most cases ,is inefficient and may even found to be dangerous and fatal. In our body one of the most important organ is liver and liver care is more important so this project is take care for liver.

The liver is the largest gland in our body and also the largest solid organ. Essential 500 functionalities can carries out by liver. It is the only organ that can regenerate. Alcohol consumption is one among the major causes of liver problems in the developed world. According to the survey of World health organization, liver disease death in India reached 259,749 of the total death. The age adjusted Death Rate is 22.93 per 100,000 of population ranks India 63 in the world.. One among five Indians having liver related diseases. There comes the relevance of our project.. We wish that our project can change the situation. We propose our system as a simple yet efficient medical guide which will help us to get a good insight of liver health problems and most probably predict the liver disease and give us expert opinion on how to move forward with our treatment plan. Each disease in a human body has its own unique symptoms and signs. This system will work on the basis of symptoms felt by patients and their relatives. It cannot find any results going to the next stage there system ask questions to the patient and give his/her disease. Here liver diseases are predicted by the use of machine learning algorithms. This study the number of liver patients cases and finalize the disease of system users by his/her symptoms.

III. SYSTEM ARCHITECTURE

Data set: Data set is a collection of data. It contains diseases with corresponding symptoms. Here discharge summary and case sheet are used as data set.

Data preprocessing: Data preprocessing removes duplicated data and incomplete tuples.

Database: Data are stored in the database. Here the data are diseases and their corresponding symptoms. **ML Algorithms:** Naïve Bayes is a classification technique, which is based on Bayes Theorem. Every pair of features being classified is independent of each other. **Predictive model:** Predictive model is the process which uses data and statistics for obtaining output. **Test data:** Test data are data which are used for testing.

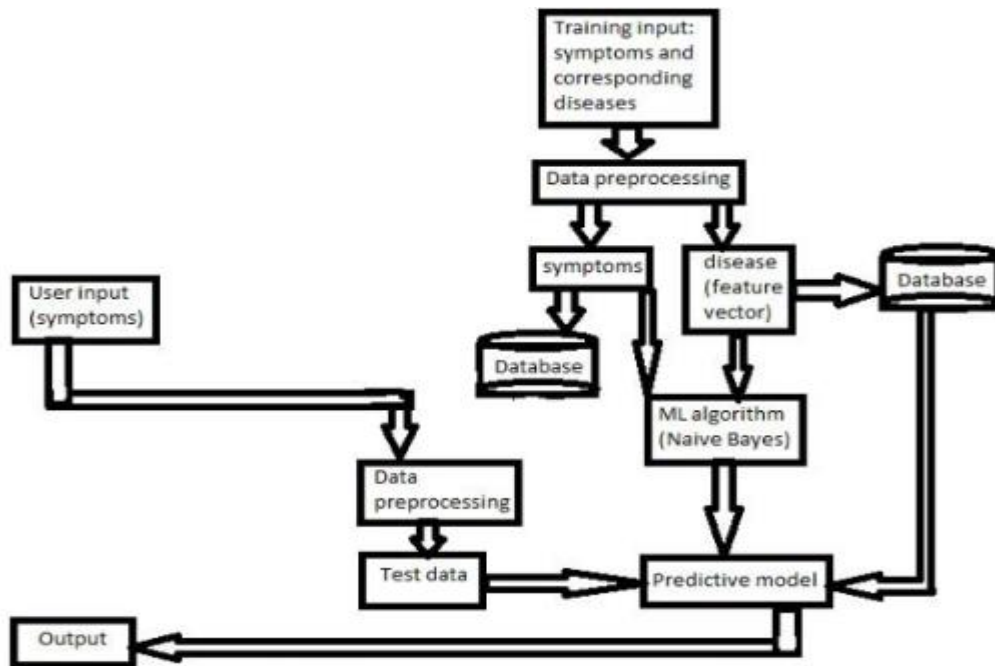


Figure 1: System Architecture

IV. 4. LIVER DISEASES

1. Jaundice

The term Jaundice is refers to express a yellowish shade to the whites of the eye and the skin. The body fluids also yellow in color. Depending upon the level of bilirubin, the color of both the skin and whites of the eyes will change. Bilirubin is a unwanted stuff found in the blood. The researches shows that high bilirubin level lead to brown in color, and moderate bilirubin levels caused yellow in color. The survey shows that around 60% of all new born in US have jaundice. Jaundice is a disease that can occur to all ages of the people, the reasons for the same is given below. The problem with bile duct and the liver are the main causes, also increased bilirubin content in the blood may lead to jaundice. An swollen liver or obstructed bile duct can lead to jaundice, as well as other underlying conditions. Symptoms include a yellow tinge to the skin and whites of the eyes, dark urine, and itchiness. Jaundice disease diagnosis can involve a variety of tests.

2. Liver Cirrhosis

Liver Cirrhosis is a complication of liver disease that involves loss of liver cells and irreversible scarring of the liver. The main causes of cirrhosis are alcohol and viral hepatitis B and C, although there are a lot of other causes. Cirrhosis can cause weakness, loss of appetite, easy bruising, yellowing of the skin (jaundice), itching, and fatigue. Diagnosis of cirrhosis can be suggested by history, physical examination and blood tests, and can be confirmed by liver biopsy.

3. Acute Liver Failure

Acute liver failure is loss of liver function that occurs quickly in days or weeks usually in a person who has no pre-existing liver disease. Acute liver failure is less common than chronic liver failure, which develops more slowly.

Fulminant hepatic crash is also termed as acute liver failure, may lead to severe complications, including excessive bleeding and increasing pressure in the brain. Failure of Liver is serious medical condition that requires immediate hospitalization. Depending up on the cause, acute liver failure can sometimes be cured with treatment. In some situations, however, transplantation of the liver may be the only treatment. Human beings ultimate aim is to live in the world with a healthy body and mind. Problems in medical field are solved by using New technologies in engineering field that make healthy world. Here we use machine learning algorithm to diagnose liver disease. This method gives results having good accuracy. Through the contrast analysis of different diagnostic results , it shows that our system provides a powerful tool for solving the problems of current medical care service. It deals with the classification of symptoms and recognition of liver disease that are related to.

V. ALGORITHM-NAÏVE BAYES ALGORITHM

The Bayes theorem is the base of the Naive Bayes algorithm, a probabilistic machine learning approach. Naive-Bayes is used in a various classification process, as Naive-Bayes is supervised learning classification algorithm. Here we will get an exact knowledge of the Naïve-Bayes algorithm and all essential concepts Naïve-Bayes. Naïve-Bayes is a simple and powerful algorithm. That is the significant advantage of Naïve bayes. Since it is a probabilistic model, the algorithm can be coded up more easily and the predictions can be made quickly.

Let there be a training data set having n features (symptoms) F_1, \dots, F_n .

Let f_1 denote an arbitrary value of F_1 , f_2 of F_2 , and so on.

Let the set of class labels(diseases) be c_1, c_2, \dots, c_p .

Let there be given a test instance having the feature vector.
 $X = (x_1, x_2, \dots, x_n)$.

We are required to determine the most appropriate class label (disease) that should be assigned to the test instance.

Step 1. Compute the probabilities

$P(c_k)$ for $k = 1, \dots, p$.

Step 2. Form a table showing the conditional probabilities

$P(f_1|c_k), P(f_2|c_k), \dots, P(f_n|c_k)$ for all values of f_1, f_2, \dots, f_n and for $k = 1, \dots, p$.

Step 3. Compute the products

$q_k = (x_1|c_k)P(x_2|c_k)\dots P(x_n|c_k)P(c_k)$
 for $k = 1, \dots, p$.

Step 4. Find j such

$q_j = \max\{q_1, q_2, \dots, q_p\}$.

Step 5. Assign the class label c_j to the test instance X .

VI. CONCLUSION

Human beings ultimate aim is to live in the world with a healthy body and mind. Problems in the medical field are solved by using New technologies in the engineering field that make healthy world. Here we use machine learning algorithm to diagnose liver disease. This method gives results having good accuracy. Through the contrast analysis of different diagnostic results, it shows that our system provides a powerful tool for solving the problems of current medical care service. It deals with the classification of symptoms and recognition of liver disease that are related to.

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