

Detecting Disease and Hospital Suggestion as Per User Symptoms

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Abstract

Given the current condition of our environment, people are facing various disease. So it is better to diagnosed the symptoms and predict the disease at the starting stage of disease. But the prediction made by diagnosing the symptoms must be precise, accurate and most likely correct. As nowadays, healthcare services is working hand-in-hand with new technology. The aim is to develop the system for prediction of disease with the help of the inputted symptoms and various machinelearning models for giving assistance to physcists.

I. INTRODUCTIONS

We get to identify the disease one is suffering from with help of the symptoms faced by that individual. Analyzing of the symptoms is one of the most important step since by analysis it we get to know the nature of the disease. [2]

Every disease can have a wide range of symptoms and symptoms may be common to various disease this is where the advance computer science models like machine learning comes into the picture. ML helps in getting the right output for the given dataset.

Storing of data in form of medical history before exiting so to avail its benefit for later use, to access records in urgency or when in need is also possible.[5]

II. MOTIVATION

Heath is one of the most important characteristics of human life. Humans can have various types of diseases. Every disease has its own symptoms and need to treated accordingly. Since, according to the symptoms faced diseases can be identified analyzation of symptoms to get the accurate disease becomes an important step .[2]

This is where our system comes into consideration. Various types of diseases having various symptoms can be identified correctly with proper analysis of the symptoms. By taking advantage of the growth in Computer Science, the proper analyzation of the symptoms can be achieved increasing the analyzation process efficiency and also the speed of getting the required result output of the system. Machine learning a module of the Modern day Computer Science can be used for such purposes.

III. IMPLEMENTATION

The user uses Web browser to connect to the Disease detection Website via internet. While accessing the site, user will be asked to either login or sign up. After user Login/Sign up, their correct credentials is been checked.

If the entered credentials has been entered correctly, user will be allowed access to the home page. User will be given the ability to either access records or analyze disease. Accessed Records hold the user's medical history.

Under Analyze Disease, user can input symptoms and depending on the symptoms analyzation on the data set is been done. User can enter up to three symptoms before the process of analyzation is been done.

After the process of analyzation, the disease is predicated suggesting nearby hospitals. Before Logging out user can store disease and hospital data in user's database which can be helpful for future reference.

IV. IMPLEMENTED ALGORITHM

Symptoms can be analyzed efficiently with the help of Machine learning. For this system, K-Nearest Neighbor (KNN) Algorithm is been used . KNN is ML Algorithm based on Supervised Learning technique.[1]

Inputted symptoms by the users are been given as a dataset to the KNN algorithm. KNN does the analyzation of the symptoms and gives us the information regarding the disease. Analyzation of the disease is most important part of the system with is done efficiently and effectively with the help of KNN algorithm.

Regression and Classification both are possible by KNN algorithm. In our system KNN is used for Classification purposes. Firstly, KNN stores the data in dataset as data gets on collecting the data gets classified into required category resembling the new data.

To find the nearest neighbor we find the distance of that query point. Distance measure can be used to get the difference between two objects. We can get distance between the points by Pythagoras theorem and can be written as:

$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

V. ALGORITHM

Steps for implementing KNN Algorithm are:-

- Step 1 : Importing the required libraries
- Step 2 : Importing the required dataset
- Step 3 : Splitting the dataset
- Step 4 : Training the model or the system
- Step 5 : Running the predictions
- Step 6: Validation checking

A) Importing the required libraries :

The libraries which are essential for the processing of the system are been imported. Libraries like numpy, matplotlib, pandas are imported

```
import numpy as np
import pandas as pd
import matplotlib as plt
```

B) Importing the required dataset :

The dataset which are been taking in the consideration in our system the symptoms dataset is been imported in this step.

```
dataset = pd.read (file)
```

C) Splitting the dataset :

The dataset which was been imported in the previous step is been split into test split and train split. The dataset is been split for calculating the distance for the labelled data.

```
x_train, x_test, y_train, y_test = train_test_split(x,y,test_size)
```

D) Training the model or the system :

In this step the training of the model is been done. We are using K neighbors classifier module.

```
from sklearn.neighbors import KNeighborsClassifier
classifier = KNeighborsClassifier(arguments)
classifier.fit(x_train, y_train)
```

E) Running the predications :

We create a y_pred vector for predicting the test set result in this step

```
y_pred = classifier.predict(x_test)
```

F) Validation checking :

In this step the evaluation of the algorithm us been done checking the validation error, testing the system with a different K value and to minimize the validation errors. After validation the data can bee visualize using matplotlib libraries.

VI. DETAILED OVERVIEW

The advancement in computer science is been very helpful for the medical science study. Various techniques provided by computer science can be used for increasing the accuracy of the result output. Machine learning can provide various algorithm which can be used for such purposes.[1]

Our system takes the benefit of machine learning for getting the relevant result output.[3] Input for the system is been provided in the form of the symptoms inputed by the user. Data processing is been done on the input provided. This processed data is been sent to the data models like KNN algorithm to analyze the data and give us the predicted output.

Data security is yet another problem faced by various systems. Since user can store the medical history data in their respective databases. They are been prompted to create their own individual accounts to store their records by sign up and login in to access the site.

The correct credentials is been checked and then user are given access to the site thereby increasing data security. A better system is also the one which while providing various functions is also easily accessible and also easy to use providing friendly environment to the user.

VII. MERITS OVER OTHER SYSTEM'S:

Major merit of the system is the availability of various functions in the same systems. The System gives the user ability to analyze the symptoms to get the information on the disease faced by them, to save the data related to the disease report for future reference, to locate the nearby hospital or clinic for the identified disease.

While keeping all the functions in mind, the system has to be efficient and easy to use for creating a user friendly environment for the user. Every user can store the information by having a login id which can be helpful for them to keep track record so not only for the present, but user can avail benefit of the records for future references

VIII. APPLICATIONS:

- User friendly and easy accessible.
- Improve data security
- User can store and access report data from database

- Improved help to the user by providing nearby hospital/Clinic recommendation.
- Wide range of data set of symptoms for getting accurate information related to the disease faced by the users

IX. MAP IMPLEMENTATION:

One of the features of the system is to provide the nearby hospitals or Clinics recommendation as per the disease identified after analyzing of the symptoms. It shows a detailed overview of the Hospital or clinics places nearby.

The API used for map implementation is “Places API” (Google enterprise API) Places API offer wide range of facilities like Place search, Place details, place autocomplete. Places API is been used for correct identification of the required hospital as per the data acquired from the analysis of the symptoms.

For Android map implementation, “Maps SDK for android” is been used. This SDK helps in handling the access to Map servers, map displays and response to give to users clicks and drags.

For mapping our website Maps JavaScript API is been used. Since, we have to show the required location as per the dataset acquired Maps JavaScript API helps in Style the map as per our need and avail its benefits for the system.

Thus, Implementation of Map in the system is been done by availing the features of Places API, Maps JavaScript API for PC and Maps SDK for android.

X. FLOWCHART:

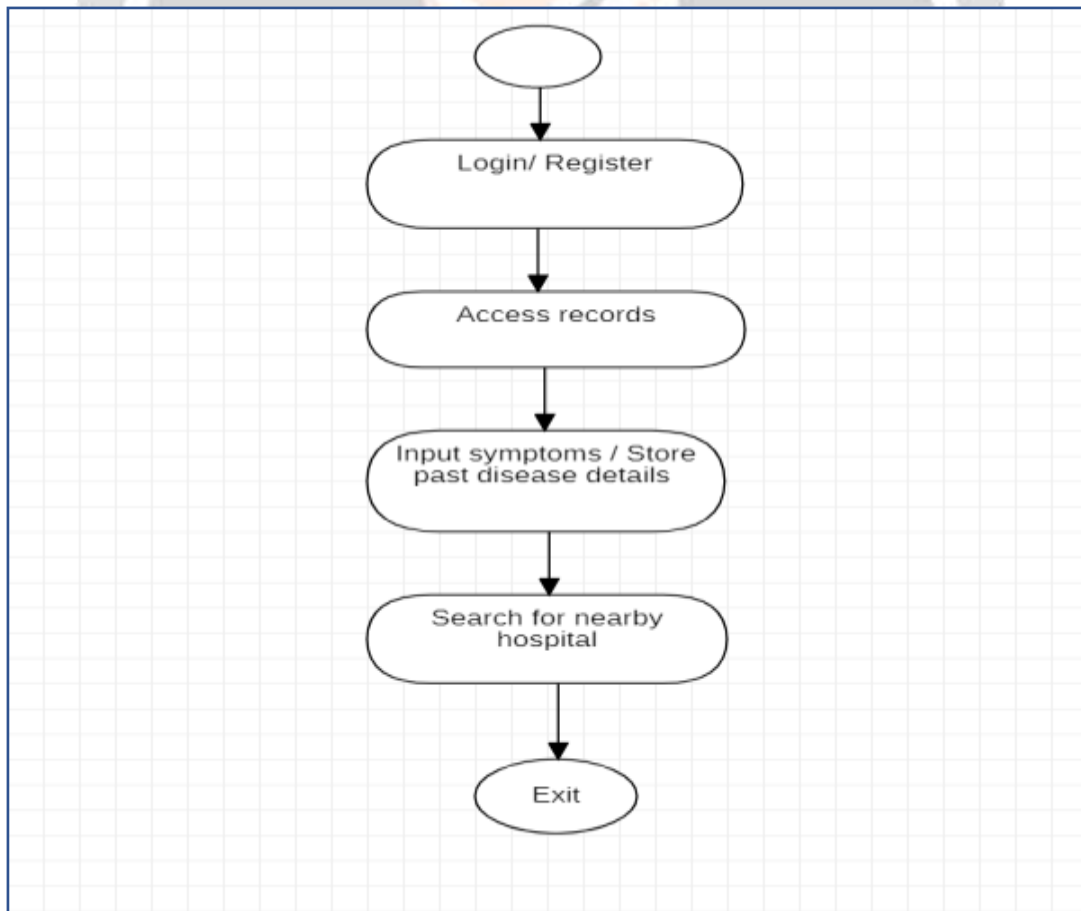


FIG: FLOWCHART DIAGRAM

XI. RESULT OF THE SYSTEM:

The system analyses the symptoms entered by the user after checking for the proper credentials entered by the user, determines the disease by the help of machine learning. User is also provided the ability to store his medical history for future use. User can also get the nearby hospital or clinic recommendation as per the causing disease.

Comparing the system with existing systems it is often seen that predicting the disease based on just 1-2 symptom from user may lead to predicting the wrong disease. To get maximize efficiency and increase the predicting ability of the proper disease our system takes up to 3 symptoms as input from the user.

On the Symptoms inputted by the user the system analyses and with the help of machine learning determines the disease. By taking maximum of 3 symptoms from user not only increases efficiency but also increases the dataset which is been used by the ML for analyses.

Based on the disease predicted by the system, the user gets the ability to check for nearby hospitals or clinics by the map implementation function offered by the system. The system shows nearby hospitals, clinics with their information data helping user for the decision making process. User can then decide which hospital or clinic to visit as they please.

Thereby, the system is quite powerful and useful helping the user not only in predicting the disease based on the symptoms inputted but also provided various functionality to the user like storing the medical history data for future reference, providing the details regarding nearby hospitals and clinic for medical treatment of the predicted disease.

XII. SCOPE OF THE PROJECT:

- To develop a system that predicts the disease by analysis the symptoms entered by the user.
- To provide the user ability to store the data in the database for future reference.
- To maintain a secure environment by only allowing the user entering correct credentials to the site.
- User can also search for the nearby Hospital or clinics as per the disease predicted by the system

XIII. CONCLUSION:

Health being an essential part of our life, it is important to treat the diseases correctly when infected. This system helps in finding the disease affected to the user by taking advantages of the advancement technologies like machine learning in getting the accurate results

XIV. REFERENCES:

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