

Health Advisory System

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Abstract: The aim of health advisory system is to provide the future health prediction based on their current medical situation. Our system takes the previous input of a patient and based on that it gives the prediction. Using the system patient can take the preventive measure and can regulate their health. We have applied the machine learning algorithm and web framework to develop the web application.

Keywords: Django, KNN classification, Logistic Regression.

1. INTRODUCTION

In this fast pacing life, we had dedicated life towards our work so, lot of us had become like a robot this had been a threat on our health physical as well as mental health. Sometimes despite being ill we had to work without taking proper care of our body and we don't have the time to go to doctor so with this set we have designed our web application. On an average in today's world people carries smartphone with them so if they want to check their health status they can do by entering the previous medical report data and get an idea of their health condition.

This model is versatile in nature can be used as a frontend as well as backend application. Various medical centre and hospital can also use this application to pre-diagnose the patient disease and can start treatment fast and effective.

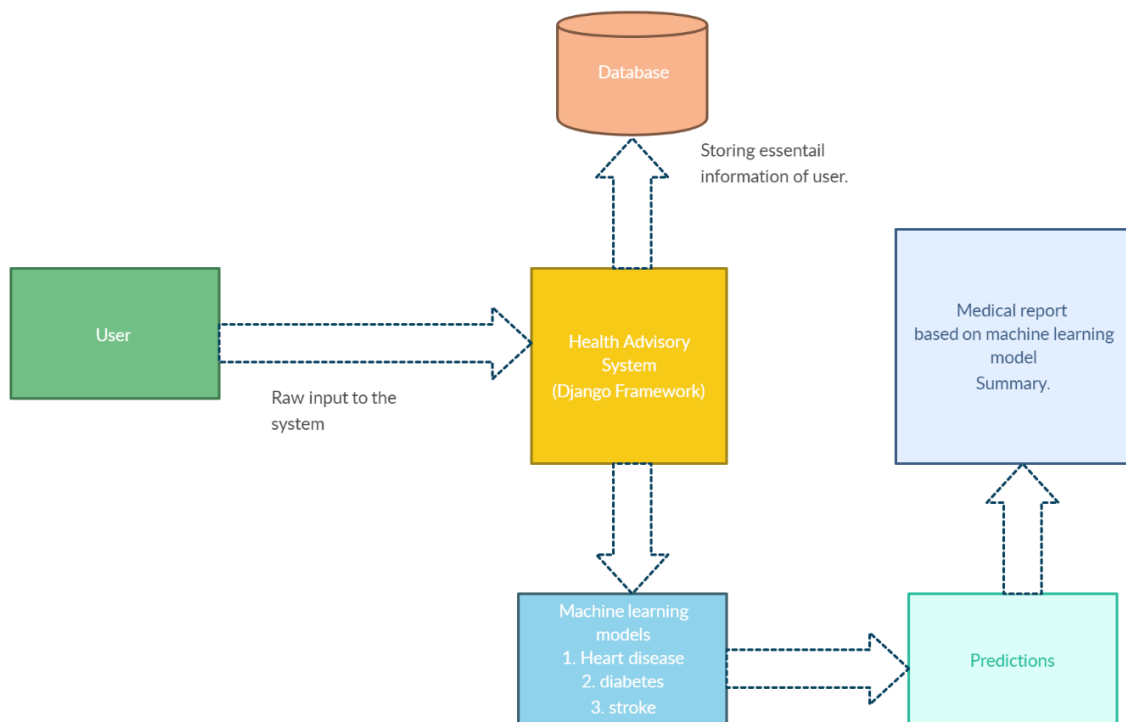
2. LITERATURE REVIEW

The major work in Health advisory system is listed below

- [1] In this model machine learning methods are applied to find the patient disease by their previous report.
- [2] This model is useful to find the heart disease, diabetes and stroke based on previous data.
- [3] This model explains the machine learning techniques used to develop the backend calculations.
- [4] This model uses the Django framework for creating the web application and works as an intermediary between machine learning models and frontend languages.
- [5] The database used is SQLite which is default database of the Django framework.

3. WORK FLOW OF SYSTEM

The patient enters its previous medical history based on its medical report the system takes the input and feed into the respective service selected by the user. The system uses the machine learning model and process the information and gives the output into a form of medical report and summary.



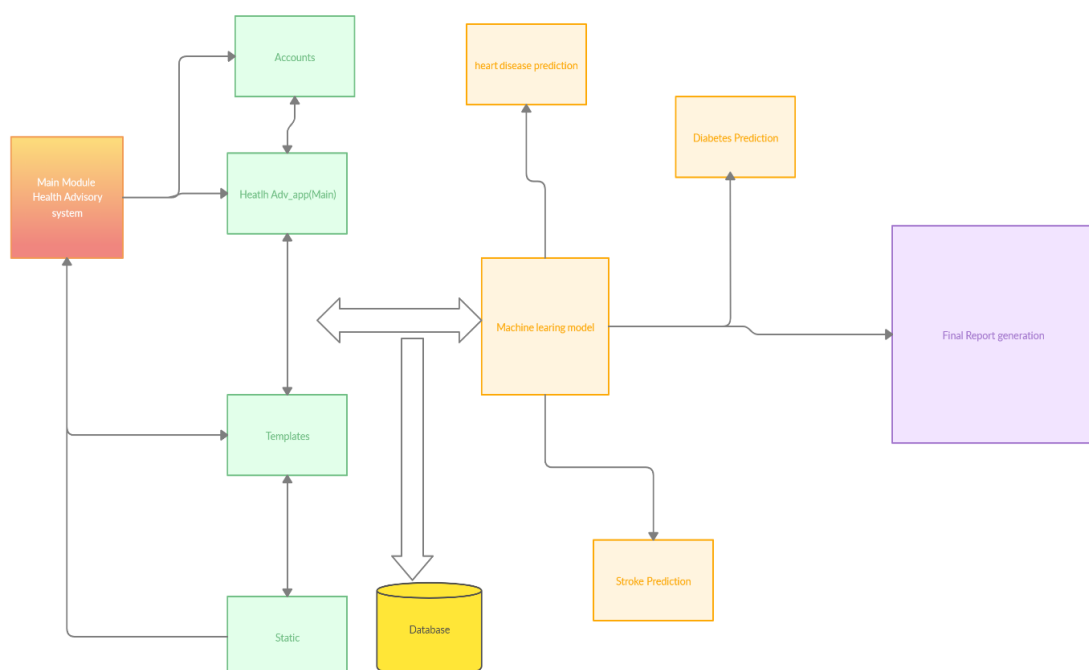
The algorithm used in the machine learning models are logistic regression and k-nearest neighbours.

4. MODULE DESCRIPTION

1. Accounts

This module manages the user credentials like his/her login information, personal details, medical history and his/her reports.

On first user had to make the account on the system to store the information. This module takes the input in the forms and store it into the database.



2. Health_Adv

this is the main sub module which is linked to all other modules and has the main control over the modules the html pages are rendered through the views.py file present in this module. Models.py file stores the information into the database.

3. Templates

This module contains the frontend part of accounts, Health_Adv.

4. Static

This module contains the images and CSS part of the templates. This module is accessed throughout the system.

5. Machine learning Model

This module contains the three sub-modules for backend processing and prediction

a. Heart Disease Prediction

It takes the input from database which stores the information of a user and then predict whether the patient has a heart disease or not.

b. Diabetes Prediction

This module predicts whether the patient had a diabetes or not.

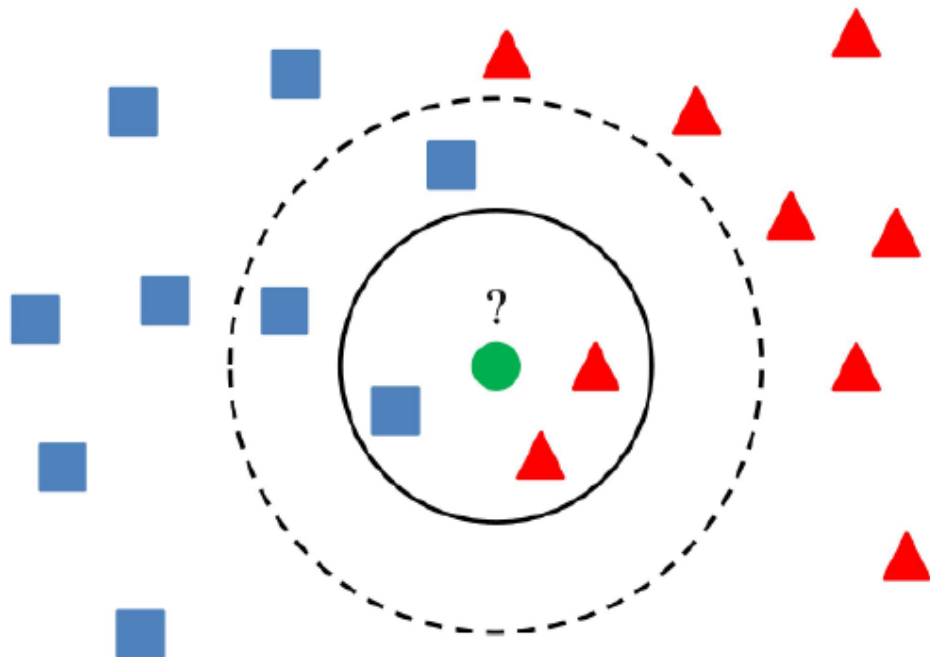
c. Stroke Prediction

This model predicts whether the patient prone to stroke or not.

5. ALGORITHMS USED

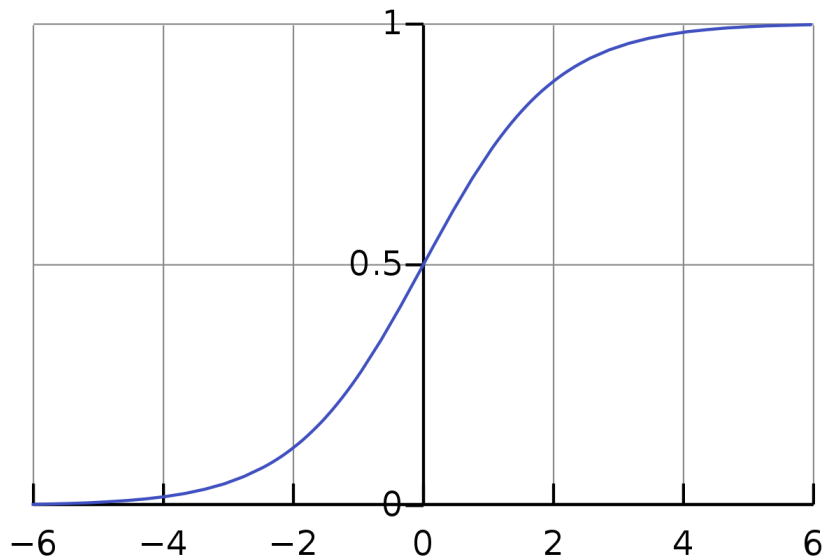
1. K-Nearest Neighbours

This is a supervised clustering algorithm used to predict the target value. It works on well-labelled data.



Consider above figure the square represent the class A and the triangle represent the class B. So our objective is to find whether the circle belongs class A or Class B. So to do this we apply the Euclidian distance formula to calculate the nearest distance. First we decide the no of neighbours we have to choose to reach the conclusion and if the object get the confidence of above 50% then we say the object belongs to that class.

2. Logistic Regression



Logistic regression is also a supervised learning algorithm used in regression and classification problems. It is a statistical part of predicting the binary classes. It is a special case of linear regression instead of target variable are categorical.

This algorithm uses a sigmoid function to predict the outcome

$$p = 1 / (1 + e^{-y})$$

6. DESCRIPTION OF DATASET USED

In this application we have used the three different types of dataset for three different models.

The dataset contains the typical parameters of disease which are essential for prediction. We had applied the data cleaning, data visualization for pre-processing part and then we had train the model for prediction.

7. CONCLUSION

Our application combines the three important disease which are affecting people very rapidly, thus these had become quite common in our country so these diseases need to be monitored at frequent basis for maintaining the healthy lifestyle of our body. This application is simple to use and gives the prediction about health. We have included the visualisation feature so that patient can monitor their past result and can get the better understanding of their health.

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