Diabetic Detection system

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***Abstract*— Our proposed project aims to use machine learning to detect diabetes, which is motivated by the limited awareness among people regarding different diseases, including diabetes. Furthermore, the prevalence of diabetes is rising each year, highlighting the importance of early detection to facilitate timely treatment and prevent complications such as heart failure, blindness, organ failure, nerve damage, and stroke, all of which can be fatal if left untreated. Chronic conditions like diabetes can have severe consequences if left unaddressed. To implement this detection system, you can acquire diverse datasets from Kaggle. By utilizing this proposed system, users will be able to determine whether they are at risk of developing diabetes We believe that this project can contribute to improving the awareness and early detection of diabetes, ultimately leading to better healthcare outcomes.**

Introduction

The term disease refers to a physical alteration from the normal state of the body that causes discomfort. Furthermore, there are numerous causes of diseases.A disease detection system has been created as a supportive tool to indicate whether an individual has been diagnosed with a particular ailment or not. Once the ailment is identified, we can then seek an appropriate remedy for it. There is a lack of awareness among people regarding certain diseases that can be detrimental to our health if not detected early. Delayed treatment can even result in death. Doctors can use the graphical user interface of this system to identify diseases in patients. The system has been designed to detect diabetes, a condition characterized by prolonged high sugar levels in the body. Although such ailments cannot be completely cured, early treatment with medications can help control symptoms. A disease detection system has been developed as an assistant tool to determine if a person is diagnosed with a particular disease. Once detected, corresponding remedies can be sought for the ailment. Lack of awareness about certain diseases is a prevalent issue, and it can pose a significant threat to our health if not addressed in the early stages. Delayed treatment can even result in fatal outcomes. The developed system offers doctors the ability to detect diseases, such as diabetes, in patients through its user-friendly Graphical User Interface. Diabetes is a chronic disorder that results in prolonged periods of high sugar levels in the body. Although there is no known cure for such diseases, early treatment can aid in symptom control through medication.

I. Review of Literature

1] Review on Frameworks Used for Deployment of Machine Learning Model ijraset-2022-Hariom Waghmare In this paper different frameworks like Flask framework, Streamlit framework,
Django Framework can be used for the deployment of the machine learning model
on web applications or services.

2] Analysis and Prediction of Diabetes Using Machine Models Prakhar Saxena, Subhadeep Saha, S. Kiruthika Devi - IEEE 2022 Diabetes is a common disease that affects the vital organs and Alzheimer's disease. The study has been done on machine learning algorithms that are SVM, Naive Bayes, KNN and Gradient Boosting for detecting diabetes. All these algorithms are compared and the one with the best accuracy is selected

3] Multiple Disease Prediction System - Ankush Singh, Ashish Yadav, Saloni Shah,
Prof. Renuka Nagpure - ijraset 2022 In this paper, system is created that predict more than one disease and do so with high accuracy. the user doesn't need to traverse different websites which saves time
as well. They have used various machine learning algorithms like Random Forest, XGBoost, and K nearest neighbor (KNN) to achieve maximum accuracy.

4] Heart Disease Prediction Using Machine Learning Algorithms - Ignatious K Pious, K Antony Kumar, Y.Cephas Soulwin and E.Nipun Reddy - IEEE2022 In this paper,an efficient and precise approach for predicting coronary heart sickness devices is built. This device is built primarily on type algorithms such as SVM, LR, ANN, K-nearest neighbor, Naive bayes and Decision tree techniques utilized to function selection for improving category accuracy and minimizing class system execution time.

5] Designing Disease Prediction Model Using Machine Learning Approach Dhiraj Dahiwade, Prof. Gajanan Patle, Prof. Ektaa Meshram - ICCMC 2019 Prediction of disease at an early stage becomes a very important task. which is very difficult for doctors to predict. As data is significantly in the healthcare field we can use KNN (K-nearest Neighbour)and CNN(Convolutional Neural Network) machine learning prediction for accurate prediction of disease. The accuracy of general disease prediction by using CNN is 84.5% which is more than KNN algorithm.

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II. TECHNOLOGY USED

1. Python

Python is an interpreted, high-level programming language.
It supports multiple programming paradigms, including procedural, object-oriented, and functional programming.

2. Jupyter Notebook

The Jupyter Notebook is an open-source web application that allows us to create
and share documents containing live code, equations, visualizations and
narrative text.

3. Streamlit

Streamlit is an open source app framework that is used to build web pages. It is compatible with numerous python libraries.

III. IMPLEMENTATION

1. Selection of Dataset

   Searched for the dataset suitable for our system and downloaded the dataset from Kaggle.

2. Analysis of data

   This step involves the action of reducing the redundancy in data. For example- Removing all the null values from the dataset, removing all the duplicate values from the dataset.

3. Selection of algorithm.

   Selection of algorithms is done on the basis of the accuracy achieved to gain better or more accurate predictions. For Diabetes we used random forest tree Algorithm.Selection of the algorithm should be done depending on the accuracy of the output.
   Higher the accuracy, the output will be better.

4. Training and Testing the model

   The dataset that we have chosen is now divided into 2 parts i.e Training dataset and Testing dataset 80% of the dataset is the Training dataset and 20% is for Testing.

5. Building the GUI

   We have used the Streamlit library of python to build the GUI (Graphical User Interface) of our system.
   With the help of Streamlit we have given some input fields to enter the necessary medical data which is required for the prediction of disease.

IV. FLOWCHART

Diabetes Detection-

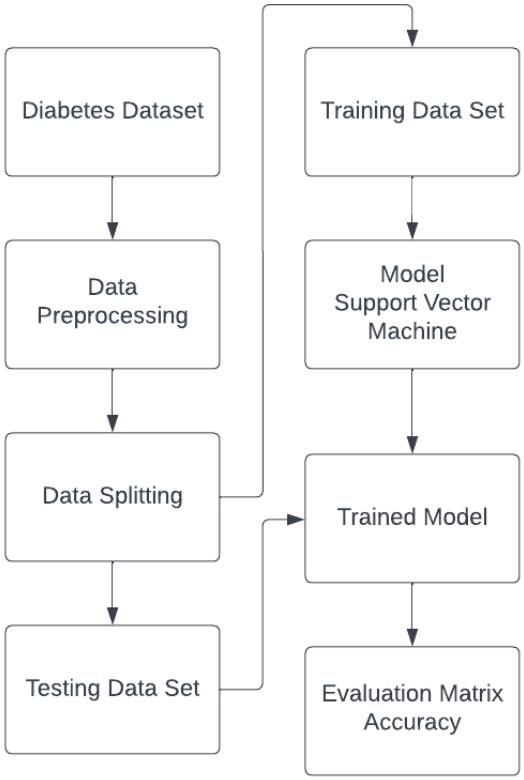


Fig.1. flowchart

V. FUTURE SCOPE

1. IMPLEMENTING THE DIABETIC DETECTION SYSTEM IN HOSPITALS IN ALL OVER WORLD

2. IMPLEMENTATION OF MORE DISEASE DETECTION SYSTEMS

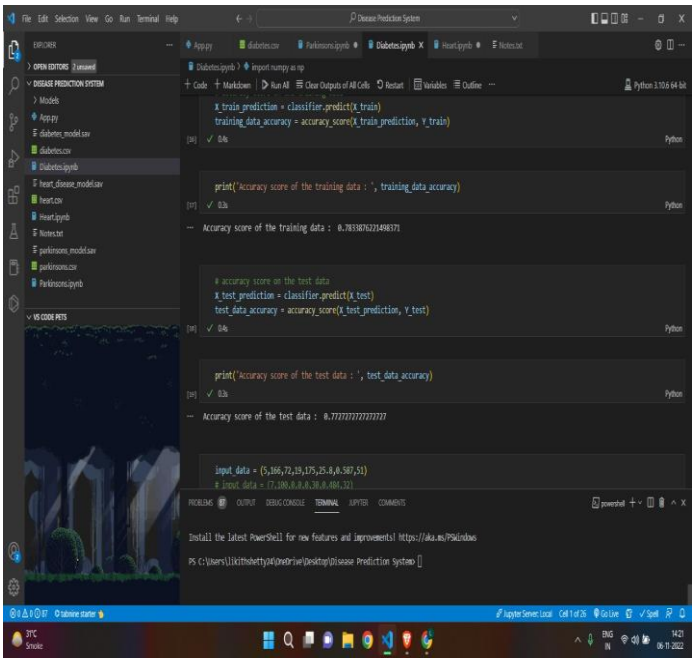
3. IMPROVING THE ACCURACY OF THE MODEL

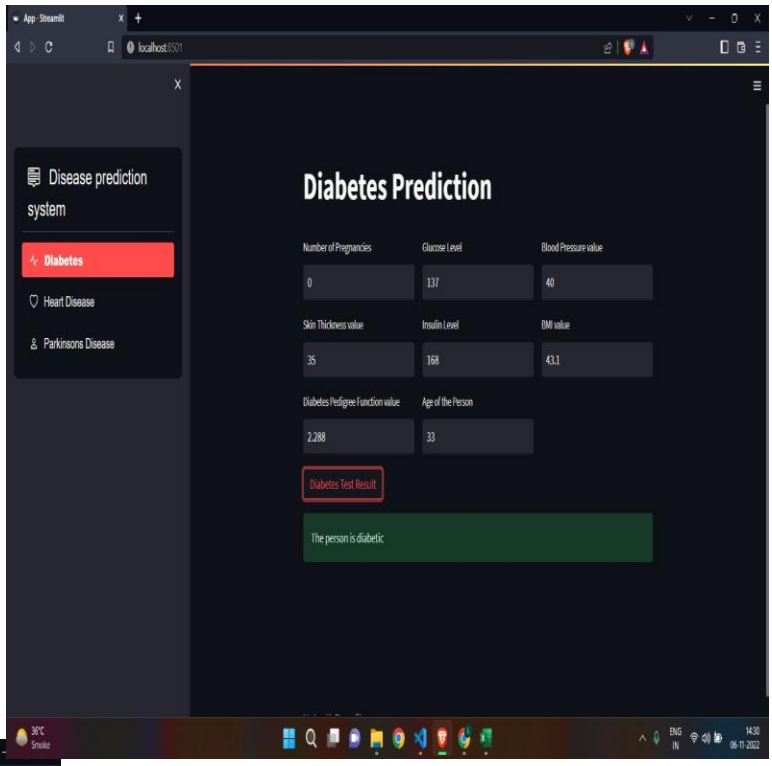
4. INCLUSION OF HOW TO TAKE PREVENTIVE AND PRECAUTIONARY MEASURES IF THE DISEASE IS DETECTED.

5. SPREADING AWARENESS ABOUT THE DISEASE

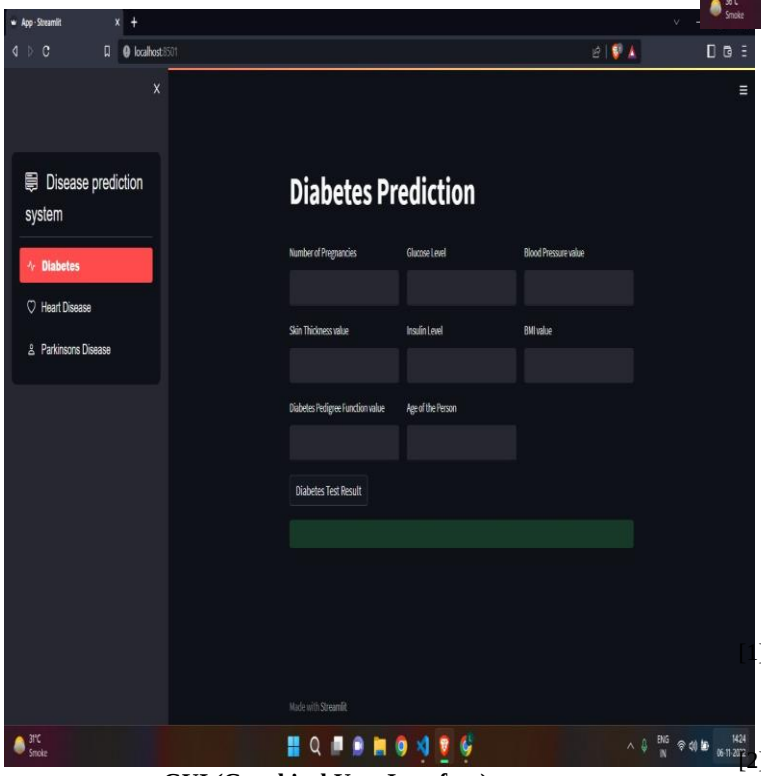
VI. RESULT

1)Diabetes Model





The above fig.2 has shown that our Diabetes detection model is 83% accurate



GUI (Graphical User Interface):

These are the user interfaces that the user can see when they open the web application.

Output: These are the outputs which are shown when the user provides the input for the following fields.

VII. CONCLUSION

We have successfully developed and implemented a diabetics detection system by taking into consideration various machine learning algorithms. This system aids in detecting diseases at their earliest stage, resulting in better treatment outcomes if user knows about its disease by using our software and system

For future work, we aim to provide instructions on how to take preventive measures and precautions upon early detection of these diseases. Additionally, we plan to incorporate more disease detection systems into our application to enhance its functionality and expand its usefulness to the medical community. With these advancements, we hope to increase the accuracy and efficiency of disease detection, leading to better healthcare outcomes for individuals across the globe.

VIII. REFERENCES

[1] Parkinson Disease dataset link : https://www.kaggle.com/datasets/thecansin/parkinsons-data-set

[2] Heart Disease dataset link : https://www.kaggle.com/datasets/johnsmith88/heart-disease-dataset

[3] Diabetes Disease dataset Link : https://www.kaggle.com/datasets/mathchi/diabetes-data-set

[4] Review on Frameworks Used for Deployment of Machine Learning Model,Hariom Waghmare, ijraset-2022

[5] Multi Disease Prediction Model by using Machine Learning and Flask API ,Akkem Yaganteeswarudu ,2020 IEEE

[6] Multiple Disease Prediction System,Ankush Singh,

Ashish Yadav, Saloni Shah,Prof. Renuka Nagpure ,ijraset 2022

[7] Heart Disease Prediction Using Machine Learning Algorithms ,Ignatious K Pious, K Antony Kumar, Y.Cephas Soulwin and E.Nipun Reddy,IEEE2022

[8] Analysis and Prediction of Diabetes Using Machine Models,Prakhar Saxena,IEEE2022

[9] Novel Intelligent Model for Heart Disease Prediction using Dynamic KNN (DKNN) with improved accuracy over SVM,Kummita Sravan Kumar Reddy,IEEE2022

[10] Prediction of Parkinson's Disease using Machine Learning and Deep Transfer Learning from different Feature Sets,Prof. Supriya Kamoji, Prof. Dipali Koshti,IEEE2021