INTERNSHIP II
UDS21D08J

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III BCA DATA SCIENCE

CONTENTS

MULTIPLE DISEASE PREDICTION SYSTEM

ABSTRACT

Multiple disease prediction system is the combination of diabetes, heart and parkinson’s disease prediction. An app has been developed using streamlit.

In Diabetes Prediction, the dataset is trained with the SVM model, and the pickled model is added in the front end code so that the user can find it easy.

In Heart Disease Prediction, the dataset is trained with the logistic regression model, as the data well suits the model, and the pickled model is added in the front end code so that the user can find it easy.

In Parkinson Disease Prediction, the dataset is trained with the SVM model, and the pickled model is added in the front end code so that the user can find it easy.

INTRODUCTION

Diabetes

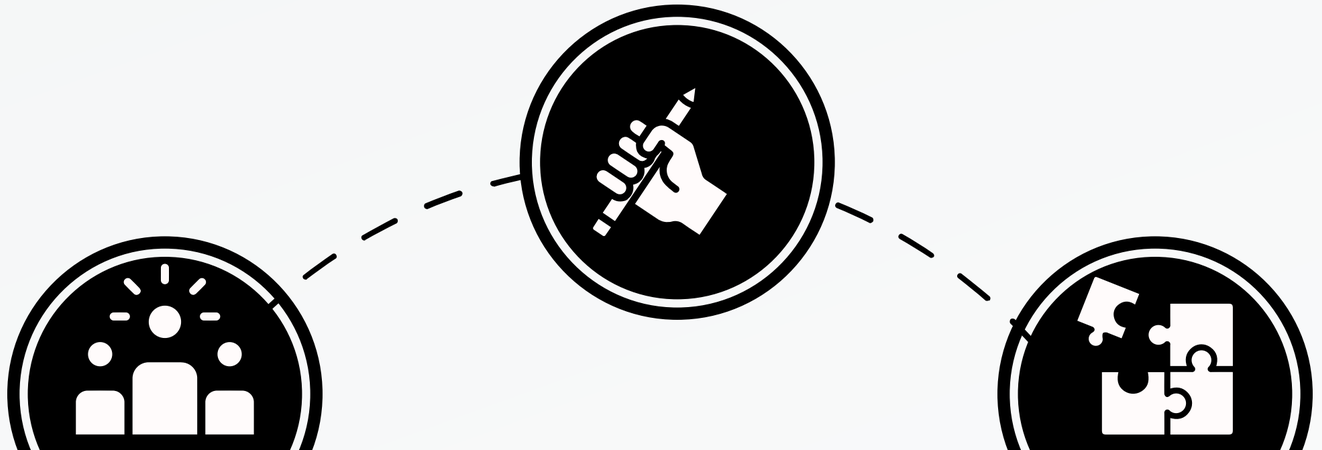
Diabetes is a disease that occurs when your blood glucose, also called blood sugar, is too high. Glucose is your body's main source of energy.

Heart Disease

Heart disease describes a range of conditions that affect the heart. Heart diseases include: Blood vessel disease, such as coronary artery disease. Irregular heartbeats Heart problems you're born with (congenital heart defects)

Parkinsons Disease

Parkinson's disease is a brain disorder that causes unintended or uncontrollable movements, such as shaking, stiffness, and difficulty with balance and coordination.



OBJECTIVE

The objective of this project is to develop a machine learning based-solution with a user friendly interface.

The goals are as follows:

- Accurate Disease Prediction
- Early Detection and Intervention
- Supports Healthcare and Clinical Decision Making

METHODOLOGY

Google Colab is used for training a model as a python notebook.
Streamlit is used as a frontend application to develop the multiple disease prediction system.

01

DATA COLLECTION

PIMA Diabetes Dataset is been collected for diabetes prediction.
Heart disease dataset has been collected for heart diease prediction.
Parkinsons dataset has been used for parkinsons disease prediction.

02

DATA ANALYSIS

By using the numpy and pandas library we analyse the data. We can say that

In diabetes prediction
- 0-non-diabetic
- 1-diabetic

In heart disease prediction
- 0-defective heart
- 1-healthy heart

In parkinson's disease prediction
- 1-Parkinson's Positive
- 0-Healthy

03

TRAIN TEST SPLIT

A train test split is when you split your data into a training set and a testing set. The training set is used for training the model, and the testing set is used to test your model. We split the data in 80:20, for all the three predictions.

04

TRAINING THE MODEL

We train the SVM classifier model in Diabetes Prediction.

We train the logistic regression model in Heart Disease Prediction

We train the SVM classifier model in Parkinson's Disease Prediction.

05

MODEL EVALUATION

The training data and the test data gives the accuracy of 77% and above for diabetes prediction.

The training data and the test data gives the accuracy of 80% and above for heart disease prediction.

The training data and the test data gives the accuracy of 87% and above for parkinson's disease prediction.

06

SAVING THE TRAINED MODEL

We save the model by using the pickle in python.

Pickle is a useful Python tool that allows you to save your ML models, to minimise lengthy re-training and allow you to share, commit, and re-load pre-trained machine learning models.

07

MODEL DEPLOYMENT

We deploy the pickled model in the front end, so that by using the model we can develop a app, that makes the user to work at ease.

Deploying a machine learning model, known as model deployment, simply means to integrate a machine learning model and integrate it into an existing production environment where it can take in an input and return an output.

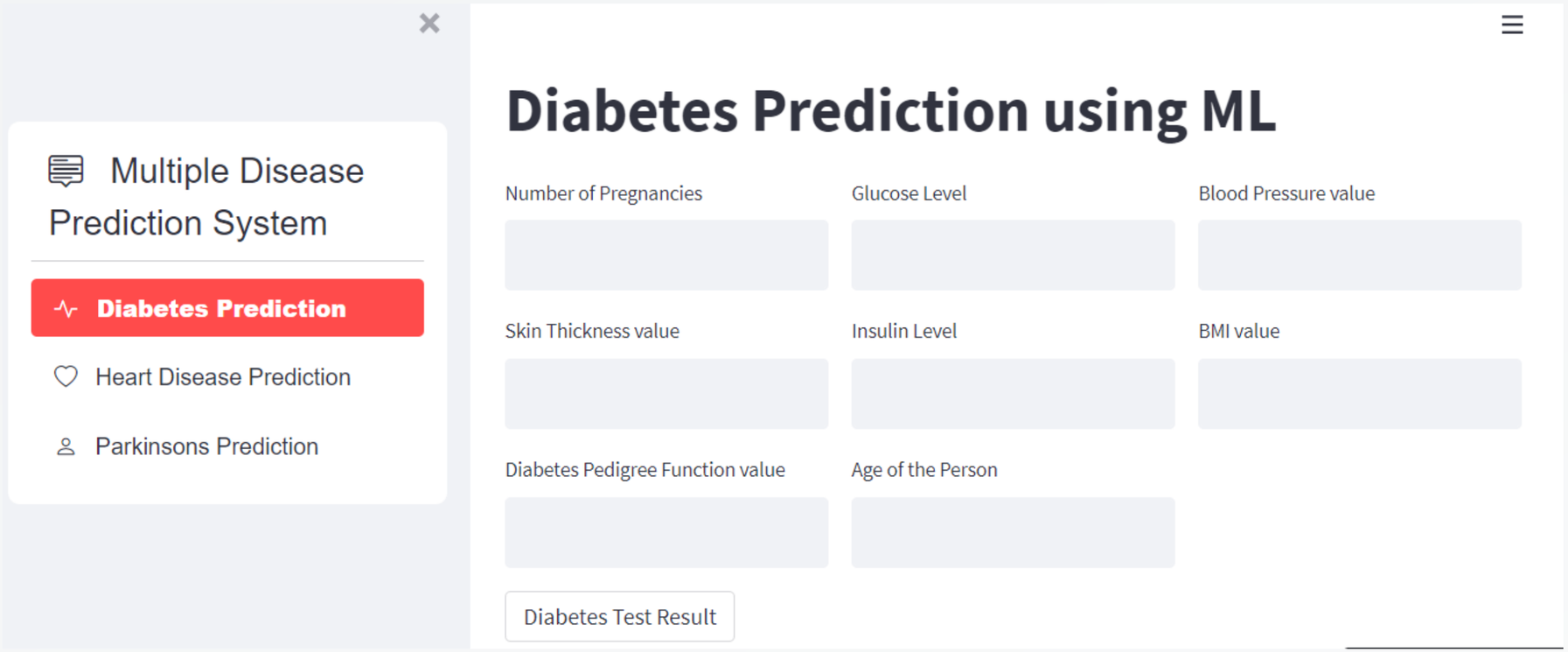
08

USER INTERFACE

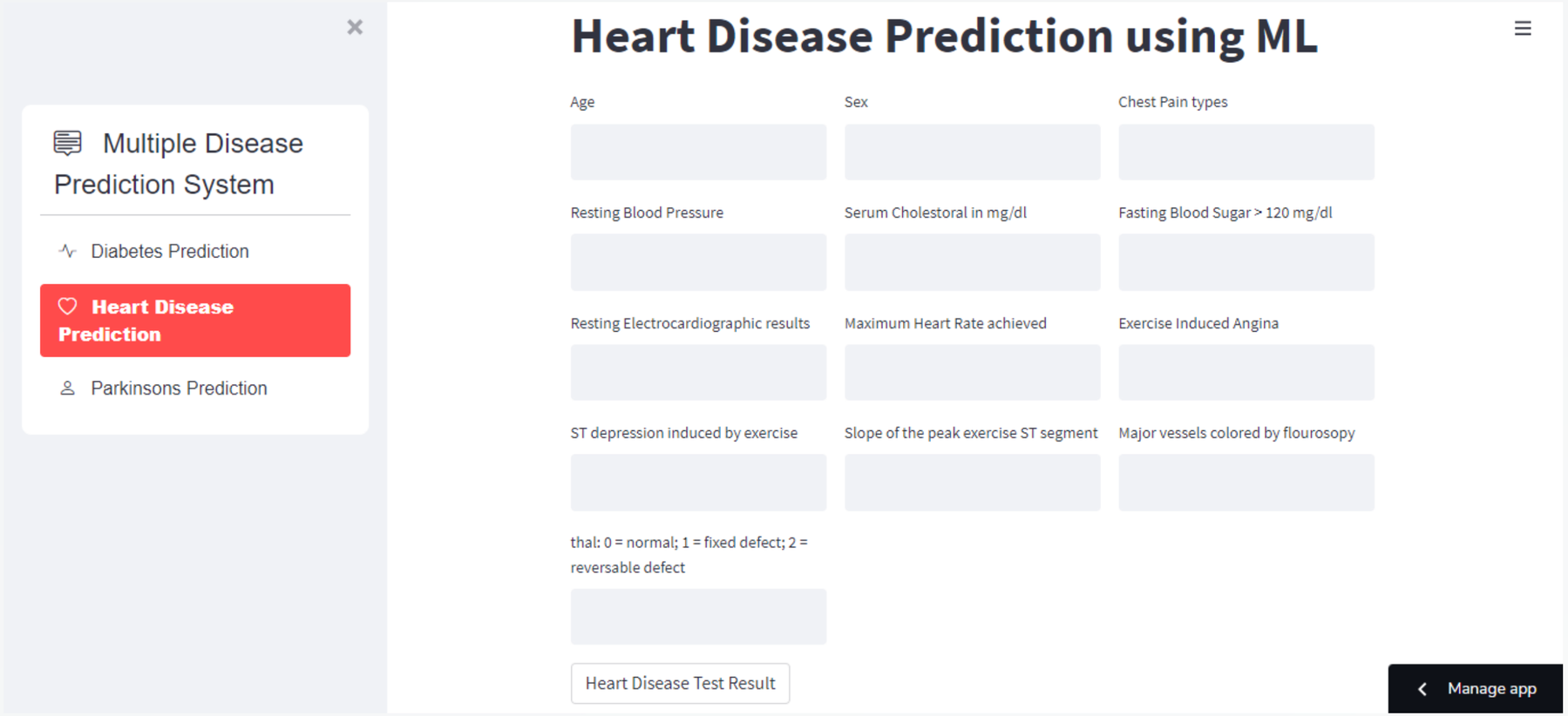
Streamlit is an open-source app framework in python language. It helps us create beautiful web apps for data science and machine learning in a little time. It is compatible with major python libraries such as scikit-learn, keras, PyTorch, latex, numpy, pandas, matplotlib, etc.

IMPLEMENTATION

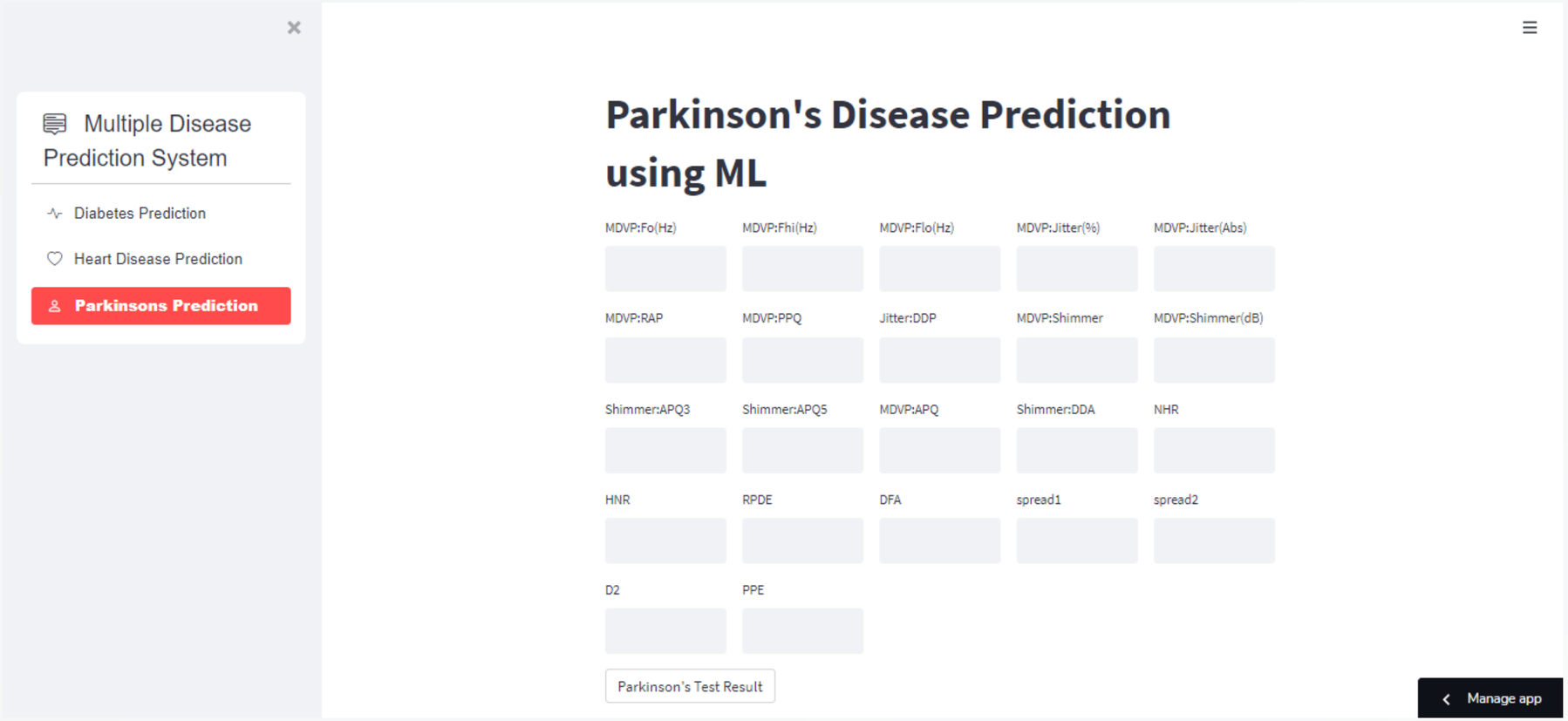
Stream lit app is connected with the git hub. As a first step the code for stream lit has to be uploaded in the git hub and then open the stream lit and connect with git hub and select the particular repository in which the code is deployed, then run the app and the interface is visible.



The user interface of Diabetes Prediction



The user interface of Heart Disease Prediction



The user interface of Parkinson's Disease Prediction

RESULT

When the required data is given the app predicts whether the person has disease or not, and we can see the results. The screenshots of the images has been attached here.

Diabetes Prediction using ML

Number of Pregnancies

2

Glucose Level

197

Blood Pressure value

70

Skin Thickness value

45

Insulin Level

543

BMI value

30.5

Diabetes Pedigree Function value

0.158

Age of the Person

53

Diabetes Test Result

The person is diabetic

Heart Disease Prediction using ML

Age	Sex	Chest Pain types
57	1	2
Resting Blood Pressure	**Serum Cholestoral in mg/dl**	**Fasting Blood Sugar > 120 mg/dl**
150	168	0
Resting Electrocardiographic results	**Maximum Heart Rate achieved**	**Exercise Induced Angina**
1	1740	1.6
ST depression induced by exercise	**Slope of the peak exercise ST segment**	**Major vessels colored by flourosopy**
2	0	2

thal: 0 = normal; 1 = fixed defect; 2 = reversable defect

1

Heart Disease Test Result

The person is having heart disease

Parkinson's Disease Prediction using ML

MDVP:Fo(Hz)	MDVP:Fhi(Hz)	MDVP:Flo(Hz)	MDVP:Jitter(%)	MDVP:Jitter(Abs)
243.439	250.912	232.435	0.0021	0.000009

MDVP:RAP	MDVP:PPQ	Jitter:DDP	MDVP:Shimmer	MDVP:Shimmer(dB)
0.00109	0.00137	0.00327	0.01419	0.126

Shimmer:APQ3	Shimmer:APQ5	MDVP:APQ	Shimmer:DDA	NHR
0.00777	0.00898	0.01033	0.0233	0.00454

HNR	RPDE	DFA	spread1	spread2
25.368	0	0.438296	0.635285	-7.057869

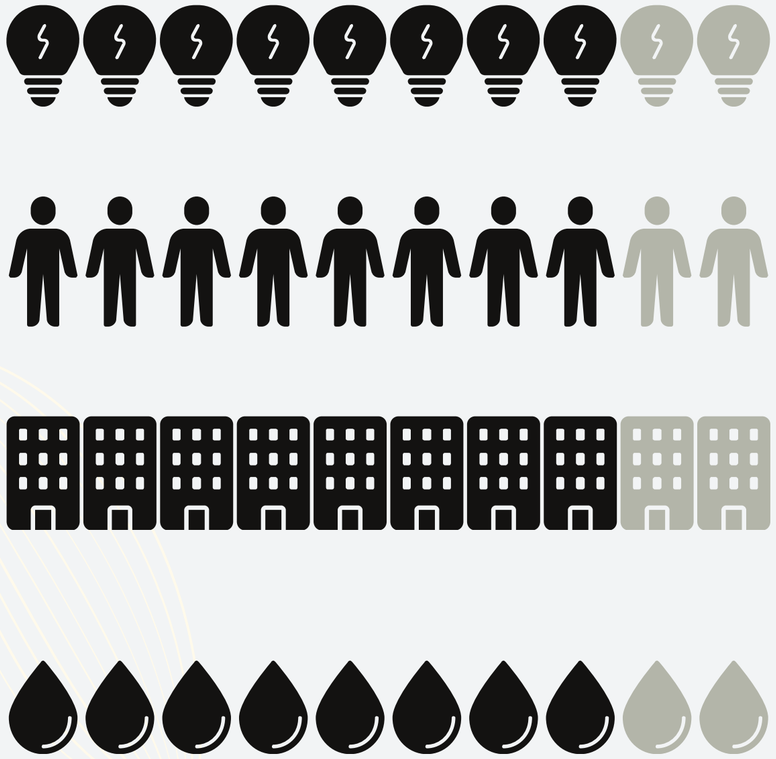
D2	PPE
0.091608	2.330716

Parkinson's Test Result

The person has Parkinson's disease

CONCLUSION

This app is built with streamlit and it is a multiple disease prediction system, which predicts the diseases.



MULTIPLE DISEASE PREDICTION SYSTEM APP LINK

https://ml-web-app-9073d0zvwre.streamlit.app/

THANK YOU