

Multiple Disease Prediction System

Submitted by

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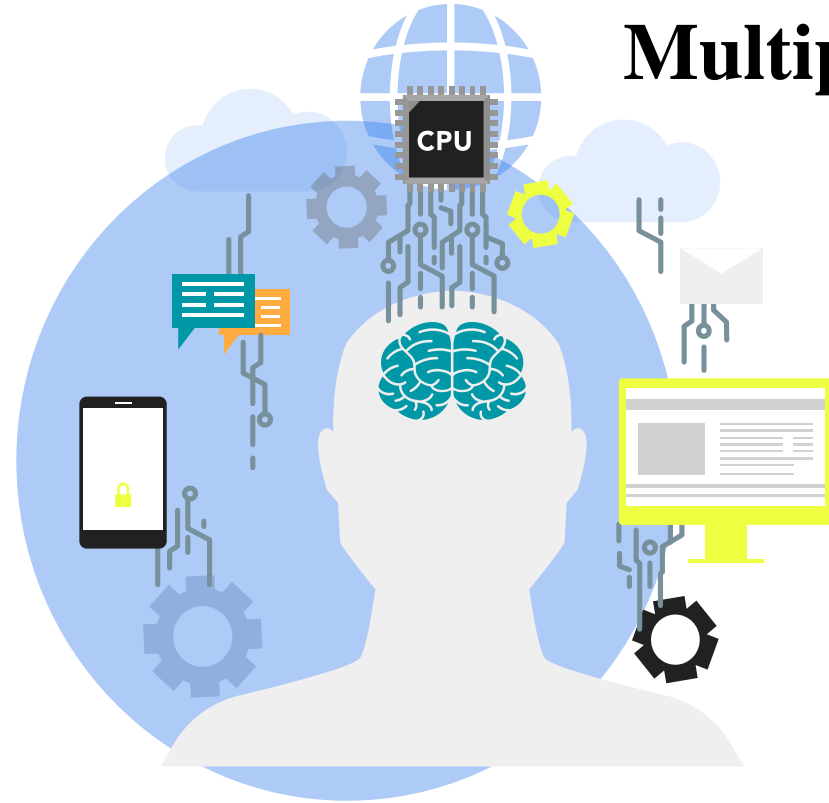
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Introduction



Multiple Disease Prediction System is a technology capable of predicting diseases of a person from given data.



I've used machine learning algorithms for predicting diseases.

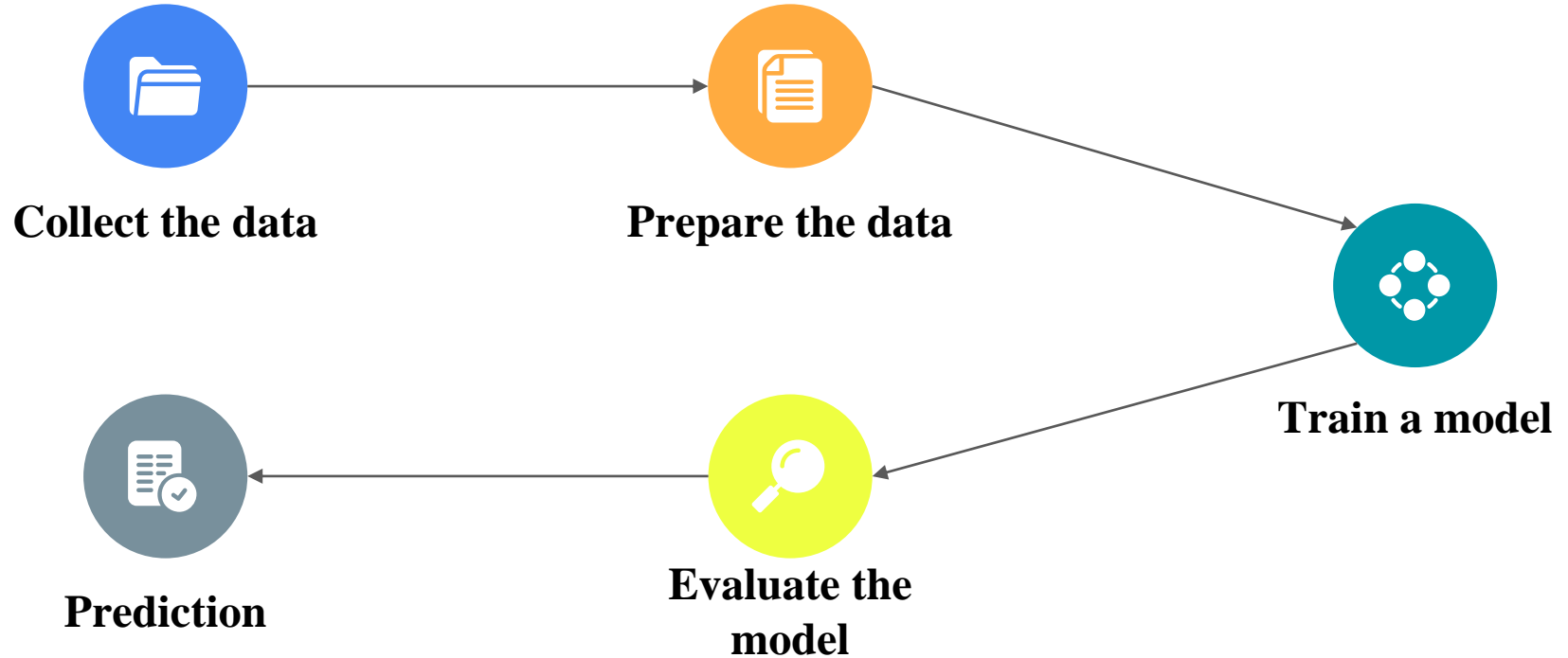


Stream-lit app used as Interface design.



Diabetes, Heart Disease, Parkinson's Disease, Breast Cancer can be detected by this project.

How Multiple Disease Prediction System Works



Machine Learning Classification

01 Supervised learning

Labeled datasets

02 Unsupervised learning

Unlabeled datasets

03 Semi-supervised learning

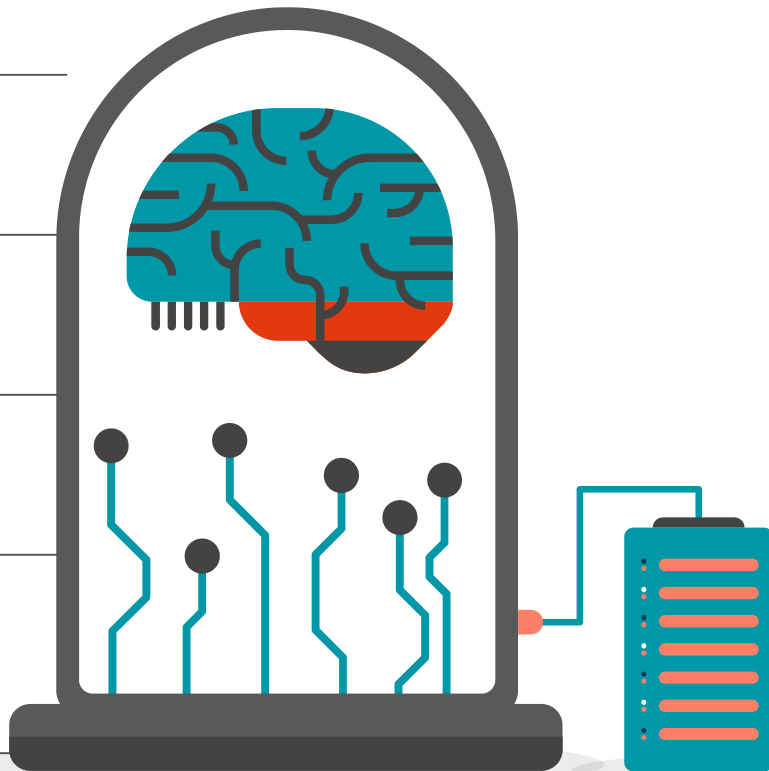
A combination of supervised and unsupervised learning.

04 Reinforcement learning

It is about taking suitable action to maximize reward in a particular situation.

05 Dimensionality reduction

The task of reducing the number of features in a dataset.

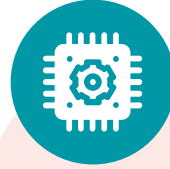


System Analysis



Machine Learning Algorithms

- Logistic Regression
- Decision Tree
- KNN
- SVM
- CNN
- XGBoost
- Naive Bayes



Framework

- Stream-lit

Machine Learning Algorithms

01

Logistic Regression

It is used to calculate or predict the probability of a binary (yes/no) event occurring.

02

Decision Tree

A non-parametric supervised learning algorithm.

03

Random Forest

The random forest is a classification algorithm consisting of many decisions trees.

04

KNN

Stores all the available data and classifies a new data point based on the similarity.

05

XGBoost

XGBoost is used for supervised learning problems, where we use the training data (with multiple features) to predict a target variable.

06

Support-Vector Machine

Supervised learning models with associated learning algorithms that analyze data for classification and regression analysis.

07

Naive Bayes

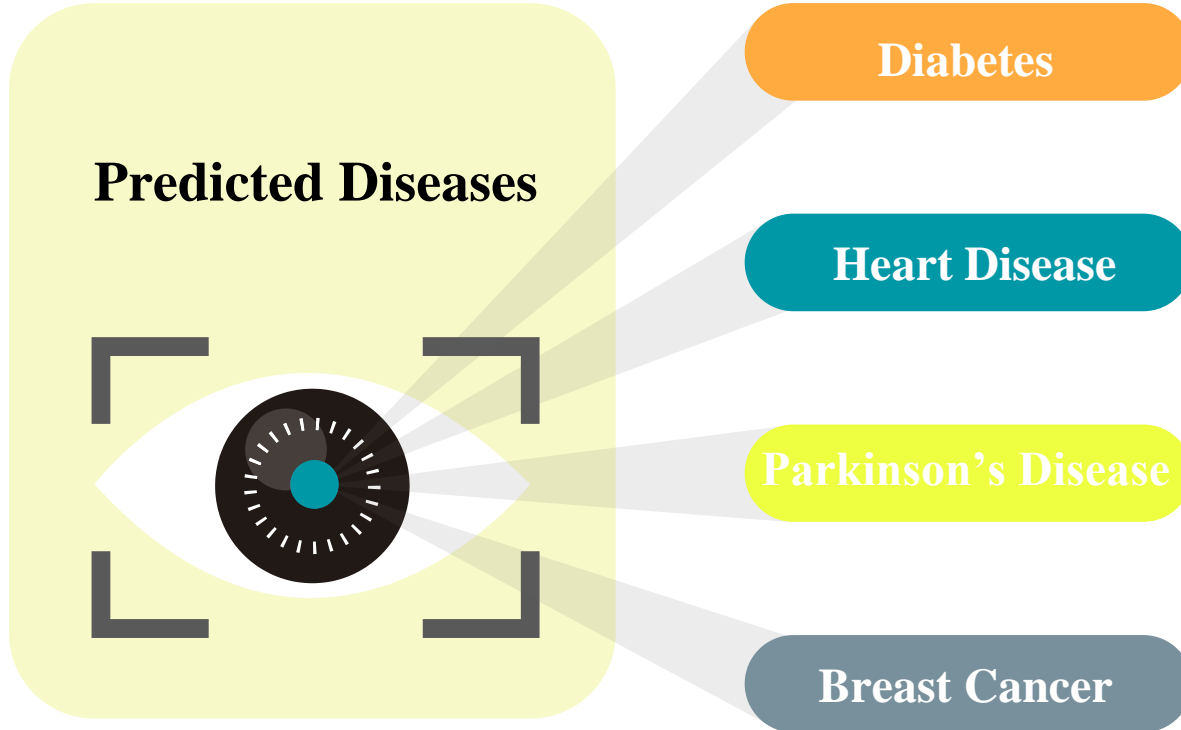
Simple and effective Classification algorithms help in building fast machine learning models that can make quick predictions.

08

CNN

Stores all the available data and classifies a new data point based on the similarity.

Diseases Prediction



System Design

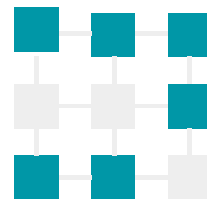


01



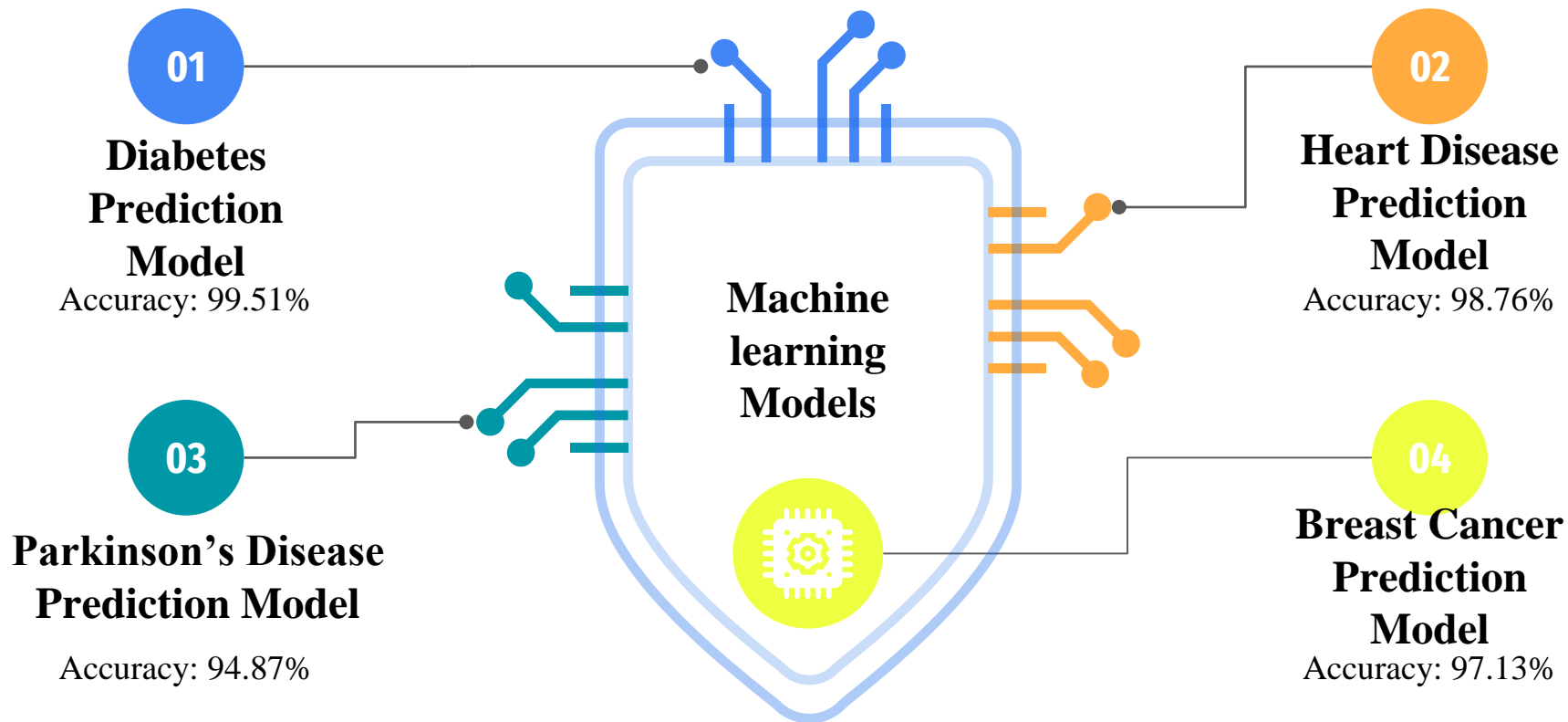
Machine Learning Models

02



User Interface

Machine Learning Models



User Interface

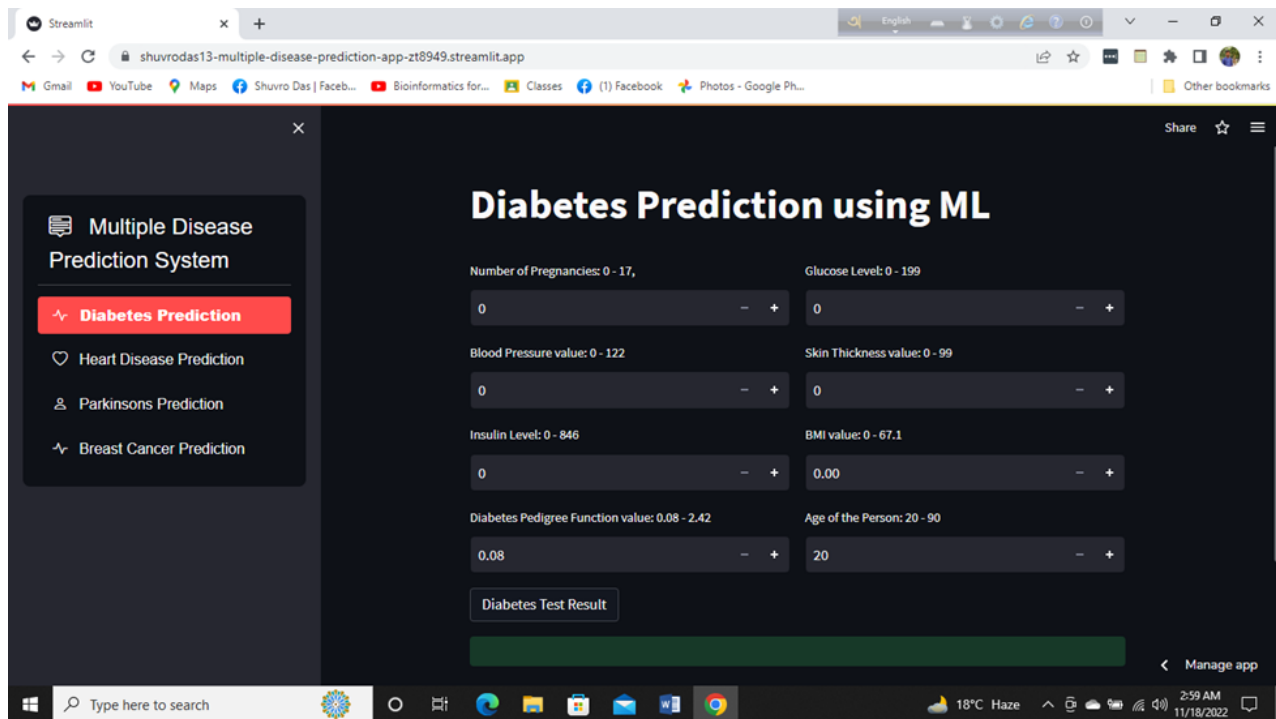


Figure: Home Page

User Interface Continue

The screenshot displays a web application interface for diabetes prediction. On the left, a sidebar menu lists 'Multiple Disease Prediction System' with sub-options: 'Diabetes Prediction' (highlighted in red), 'Heart Disease Prediction', 'Parkinsons Prediction', and 'Breast Cancer Prediction'. The main area is titled 'Diabetes Prediction using ML' and contains several input fields with numerical values and range indicators:

- Number of Pregnancies: 0 - 17, value: 0
- Glucose Level: 0 - 199, value: 137
- Blood Pressure value: 0 - 122, value: 40
- Skin Thickness value: 0 - 99, value: 35
- Insulin Level: 0 - 846, value: 168
- BMI value: 0 - 67.1, value: 43.10
- Diabetes Pedigree Function value: 0.08 - 2.42, value: 2.29
- Age of the Person: 20 - 90, value: 33

Below the inputs is a 'Diabetes Test Result' button. A green box at the bottom displays the prediction: 'This person has 99% chance of diabetes'. The interface is viewed in a browser window with a Windows taskbar at the bottom showing the date as 11/18/2022 and time as 1:17 AM.

Figure: Diabetes Positive

User Interface Continue

The screenshot shows a web browser window displaying a Streamlit application. The browser's address bar shows the URL: `shuvrodas13-multiple-disease-prediction-app-zt0949.streamlit.app`. The application has a dark theme. On the left, a sidebar titled 'Multiple Disease Prediction System' contains four buttons: 'Diabetes Prediction' (highlighted in red), 'Heart Disease Prediction', 'Parkinsons Prediction', and 'Breast Cancer Prediction'. The main area is titled 'Diabetes Prediction using ML'. It contains several input fields with numerical values and ranges:

- Number of Pregnancies: 0 - 17, value: 1
- Glucose Level: 0 - 199, value: 85
- Blood Pressure value: 0 - 122, value: 66
- Skin Thickness value: 0 - 99, value: 29
- Insulin Level: 0 - 846, value: 0
- BMI value: 0 - 67.1, value: 26.60
- Diabetes Pedigree Function value: 0.08 - 2.42, value: 0.35
- Age of the Person: 20 - 90, value: 31

Below the input fields is a button labeled 'Diabetes Test Result'. Underneath the button, a green box displays the result: 'The person has not diabetes'. At the bottom right of the application area, there is a link that says 'Manage app'.

Figure: Diabetes Negative

User Interface Continue

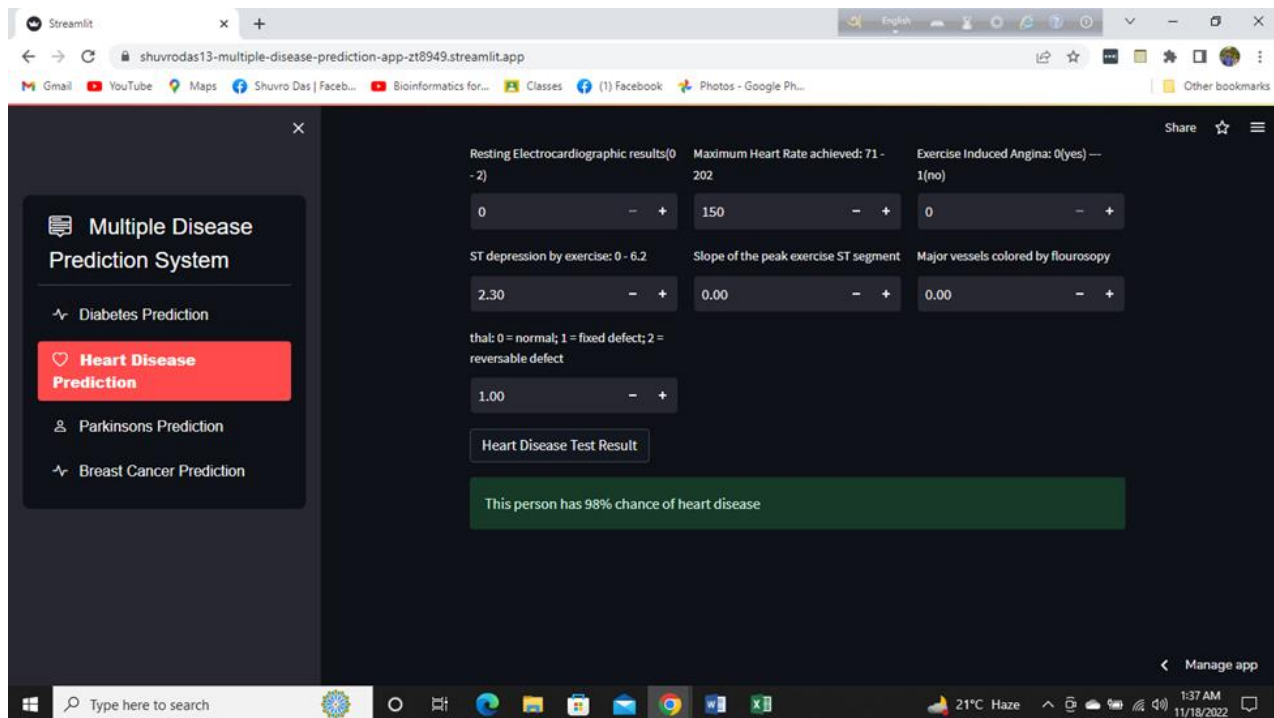


Figure: Heart Disease Positive

User Interface Continue

The screenshot displays a web application titled "Multiple Disease Prediction System" running on a Streamlit platform. The interface is dark-themed and features a sidebar on the left with navigation options: "Diabetes Prediction", "Heart Disease Prediction" (highlighted in red), "Parkinsons Prediction", and "Breast Cancer Prediction". The main content area contains a form for "Heart Disease Prediction" with the following input fields and values:

- Age: 29-77 (63)
- Sex: 1(male)-0(female) (1)
- Chest Pain types: 0 - 3 (2)
- Resting Blood Pressure: min: 94 — max: 200 (130)
- Serum Cholesterol in mg/dl: 126 — 564 (254)
- Fasting Blood Sugar > 120 mg/dl: 1(true) - 0(false) (0)
- Resting Electrocardiographic results(0 - 2) (0)
- Maximum Heart Rate achieved: 71 - 202 (147)
- Exercise Induced Angina: 0(yes) — 1(no) (0)
- ST depression by exercise: 0 - 6.2 (1.40)
- Slope of the peak exercise ST segment (1.00)
- Major vessels colored by flourosopy (1.00)
- thal: 0 = normal; 1 = fixed defect; 2 = reversible defect (3.00)

Below the input fields is a "Heart Disease Test Result" button. The result is displayed in a green box: "The person does not have any heart disease". The bottom of the screen shows a Windows taskbar with the time 1:51 AM and date 11/18/2022.

Figure: Heart Disease Negative

User Interface Continue

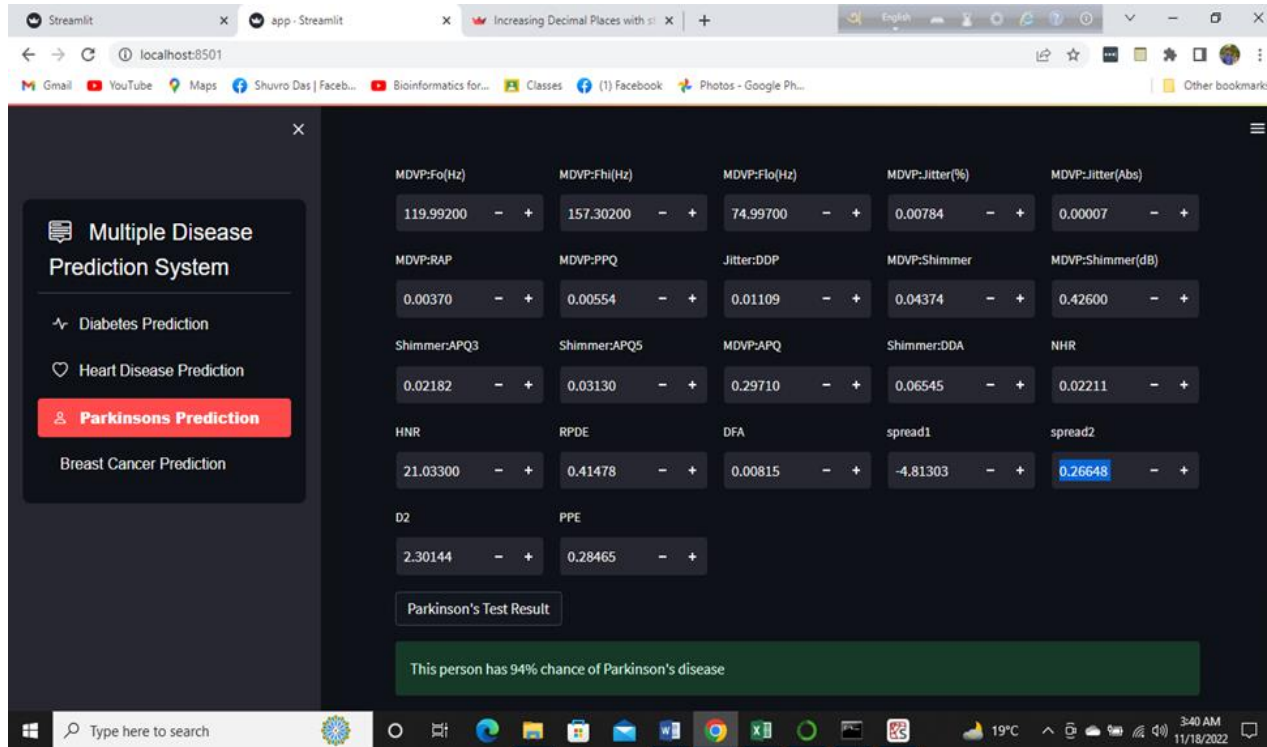


Figure: Parkinson's Disease Positive

User Interface Continue

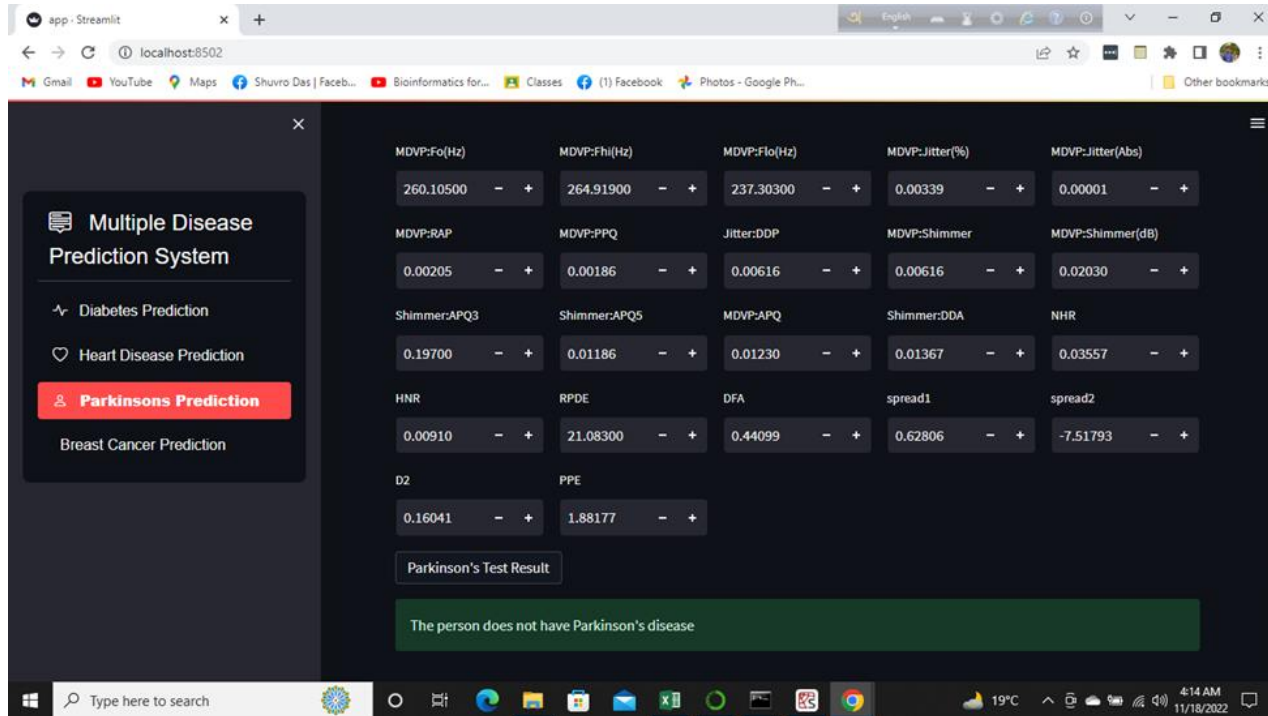


Figure: Parkinson's Disease Negative

User Interface Continue

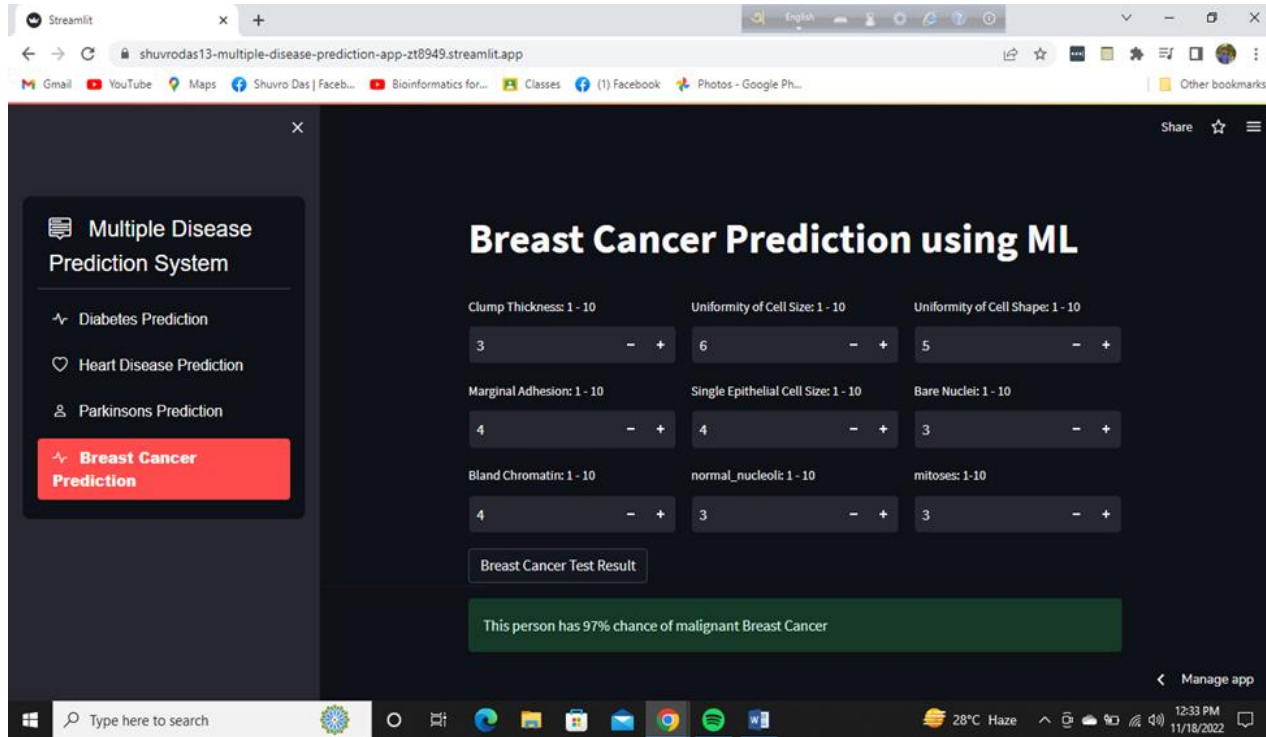


Figure: Breast Cancer Positive

User Interface Continue

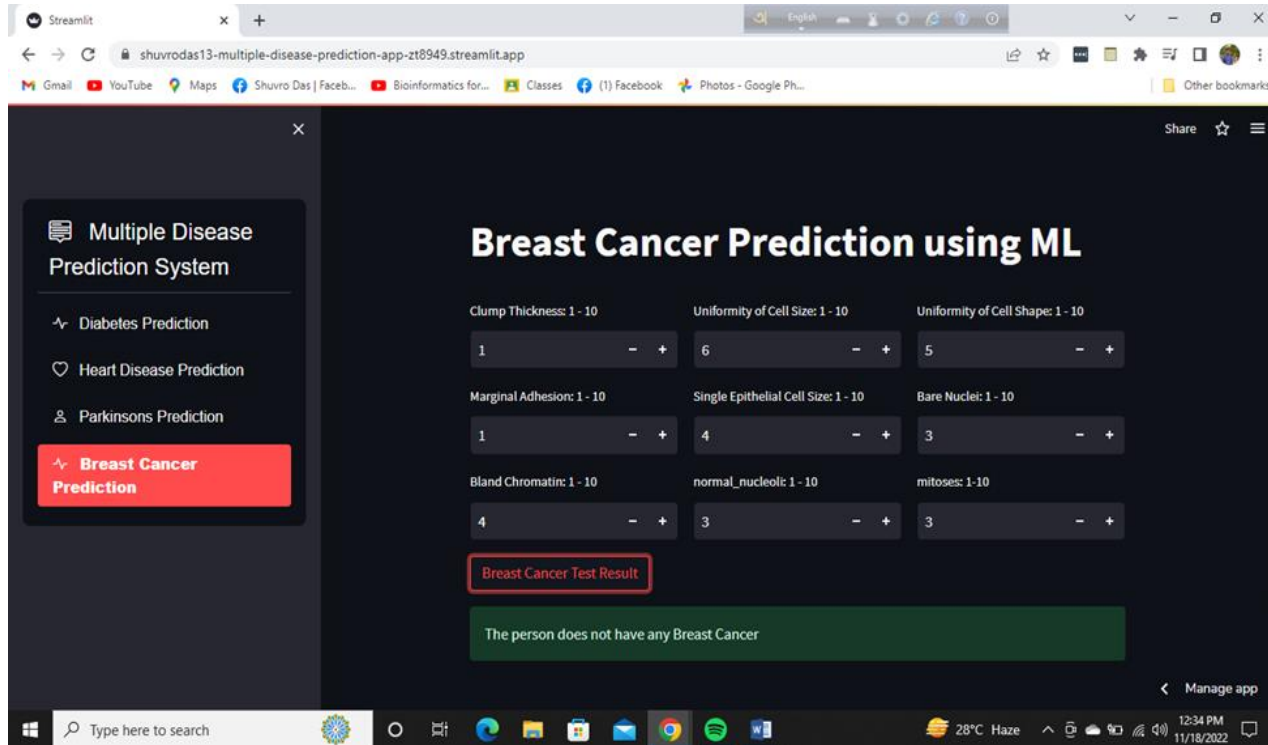


Figure: Breast Cancer Negative

Accuracy of The Models

99%

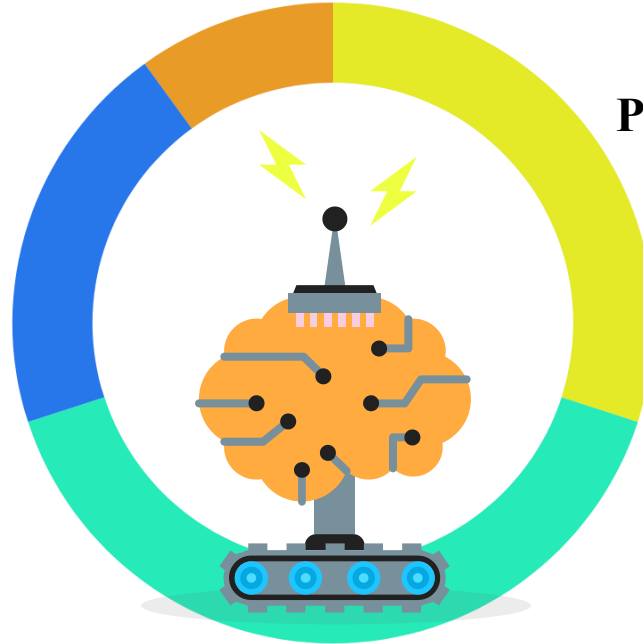
Diabetes Accuracy

Using Random Forest

98%

Heart Disease Accuracy

Using Random Forest



94%

Parkinson's Disease Accuracy

Using CNN & KNN

97%

Breast Cancer Accuracy

Using Support Vector
Machine

Advantages



Using this project anyone can know the prediction results of Diabetes, Heart disease, Parkinson's disease & Breast cancer.



Don't need often visit to the hospitals.



Cost effective.

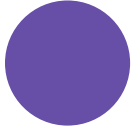


Time saving.



Reduce pathological test.

Future Work



Add Multiple Feature



Chatbot System



Wish to work on other disease



Image Processing, Neural Network & Deep Learning.



Thank you!