Heart Disease Prediction

User Manual

Version 1.4.*x*

Web Application

Service and Support

Should you encounter any problem, please give us an opportunity to address it before returning this product. Most technical support questions can be answered through our knowledge base or email support service at *heart.disease.prediction.system@gmail.com* . If the answer is not available or if you prefer, please contact at the best telephone number shown below.

Accessing Online Support

Mail our product support mail at *heart.disease.prediction.system@gmail.com* and choose from these topics:

Contacting Technical Support

When contacting for support, have your system hardware, and system software versions available.

Middle East	+92 314 3118601 +92 304 2723854 +92 335 0237955 +92 342 3579322

** Toll free number available in the following countries: Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom*

Table of Contents

About the Heart Disease Prediction Software

A mixture of lifestyle changes, medication and, in some cases, surgery, will effectively manage heart disease. The signs of heart disease can be reduced with the right treatment, and heart functioning increased. The projected outcomes can be used to avoid and thus reduce cost of surgical and other expensive treatments. The heart is a very critical part of the human body. It pumps blood into the whole body If the flow of blood in the body becomes insufficient, organs like the brain suffer, and if the heart stops working completely, death occurs within minutes. Some of the heart disease risk factors are:

1. Smoking: Smokers are twice as likely to have a heart attack as nonsmokers.
2. Cholesterol: A low cholesterol diet and Tran's saturated fat can help lower cholesterol levels and reduce heart disease risk.
3. Blood pressure: High BP leads to heart Attack.
4. Diabetes: If not controlled, diabetes can result in severe heart damage including heart attack and death.
5. Sedentary life style: Simple leisure activities, such as gardening and walking, can reduce our risk of heart disease.
6. Eating Habits: A healthy diet of the soul, low in salt, calories, saturated fat, Trans fat, cholesterol and refined sugars can decrease our risk of heart disease.
7. Stress: Poorly controlled stress can result in heart attacks and strokes.

There are many methods related to prediction of disease. Yet heart-related disease in particular has been analyzed and the level of risk is produced. But there are usually no such tools that are used for specific disease prediction.

The main objective is to predict the Boolean class heart disease prediction, which represents whether a patient has heart disease or not:

- False does not represent heart disease.
- True represents heart disease present.

System has details that are categorized according to features in it if patients have heart disease or not. This proposed system will attempt to use this dataset to create a model that tries to predict whether or not a person has this disease.In this proposed system, we use 4 Classification algorithm’s BaggingClassifier(GaussianNB), MLPClassifier, SVC and AdaBoostClassifier(RandomForestClassifier). Calculating the score using the sklearn library. Implements VotingClassifier to get best accuracy results. Using the Comparing Models and Confusion Matrix to finally analyze the results. It should be grouped into separate structured data depending on the features of the patient's heart from the dataset we have. First, we have to import the dataset. Read the dataset, the data should contain different variables like age, gender, sex, cp(chest pain),slope, target etc. The data should be explored so that the information is verified. The records are divided into two datasets: dataset training 80% and dataset testing 20%. To avoid bias, the records are selected randomly for each set. Using VotingClassifier, we need to create a model that predicts the disease of the patient.

Operating System Compatibility

The Heart Disease Prediction Software is compatible with the following Windows® operating systems:

- Windows Vista®
- Windows 7
- Windows 8

Compatibility can vary, depending on hardware configuration and operating system. For highest performance and reliability, use the Windows Update service to download and install the latest updates and service pack (SP).

Hardware requirements

Hardware	Minimum requirements
Computer	2 GHz minimum, multi-core processor
Memory (RAM)	At least 4GB, preferably higher
Hard disk space	At least 10 GB

Software requirements

Software	Minimum requirements
Operating system	Windows Vista® or above
IIS (Internet Information Services)	Version 8 or higher

Browser Compatibility

While the Heart Disease Prediction System may work with various browsers, we recommend using one of the following for the best experience:

- Microsoft Internet Explorer (IE) v11 or later
- Microsoft Edge
- Firefox v45 or later
- Google Chrome v58 or later.

In other browsers, performance and graphical consistency may suffer.

Functional Overview

All operational features and capabilities of the Windows Vista® are presented in five tab-selected screen displays where:

The . . . tab display	Provides . . .
Signup	This Section provides the “Signup” facility to user to create a new account. The components required to perform this operation are Signup credentials (Names, Email, Date of Birth, etc.). The user must fill up the fields which include (Complete Name, Email, Password and Confirm Password, Gender, Date of birth, Country etc.)
Login	This Section contains the “Login” page. All users are required to access our website. The main operation on this page is login and its components are login credentials (Email/Username, Password. This section also provides the facility for the user to redirect on register page, in case the user doesn’t have an account. It also allow user redirect to forget password page in case of loss of password.
Heart Analysis	This Section provides the “Heart Analysis” facility to user to submit their symptoms to the system for heart disease prediction. As the user click on submit the field will sends all the symptoms information database and gets prediction result. The user to submit their symptoms to the system using fields which include (Chest pain sex, age, Resting ECG and Thal, Slope, Cholesterol etc.)
Previous History	This Section provides the “Analysis History” facility to user to their previous analysis records. As the user click on Analysis History page a table with all the field and with all the information about the user stored in our database.
Password Recovery	This section contains the “Password Recovery " page. The main operation of this page is to restore the password for the user and its component is Email Address. The user only needs to write an email in the field and click the given button. This section uses the server’s email service to send the current/changed password to user email address.
Profile	This Section provides the “Profile” facility to user to edit his/her personal data. As the user click on Edit profile the field will get enabled with all the information about the user stored in our database. The user can edit fields which include (Complete Name, Email, Password and Confirm Password, Gender, Date of birth, Country etc.)

Signup

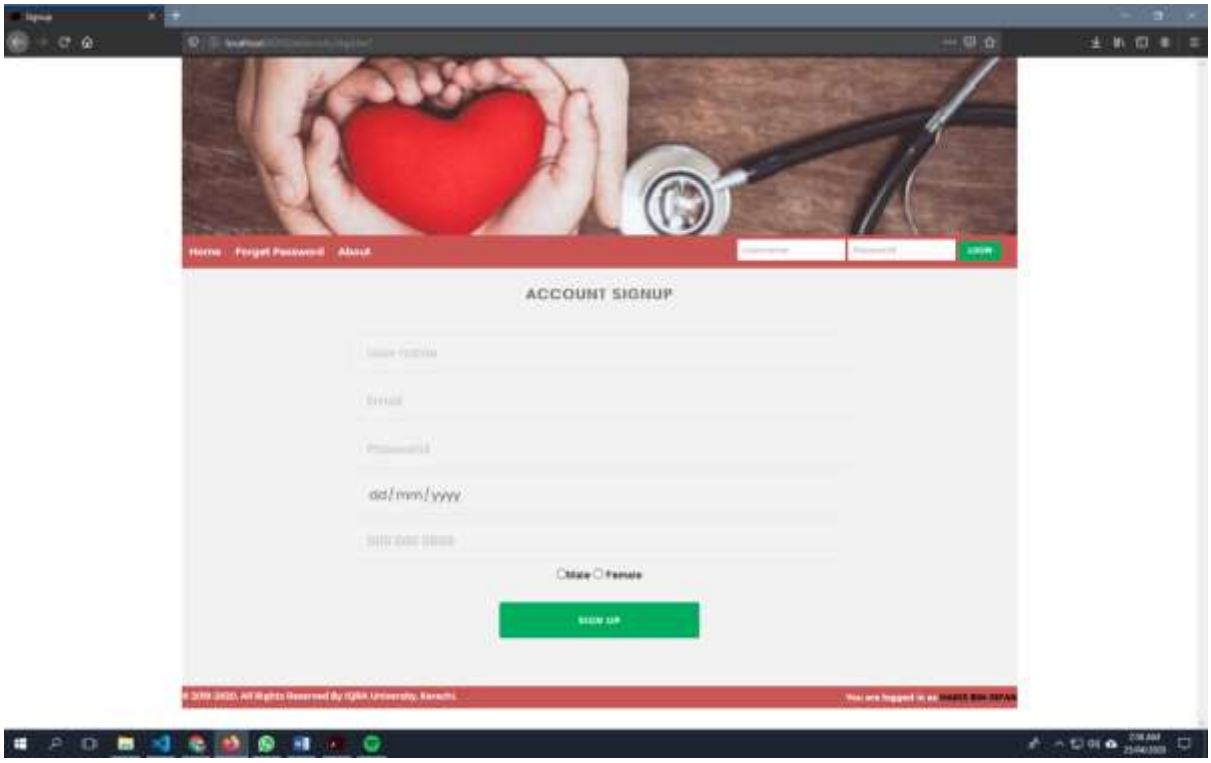
Purpose

this section allows the user to submit personal credential and get registered:

- Signup Form.
- Validation for not to put special characters in name and city fields.
- Submit button to submit a request for creating an account.

Navigation & User Interaction

The user is required to insert the correct name, email, password, and other credentials, after successful registration, the user will have logged in and can explore further.



Login

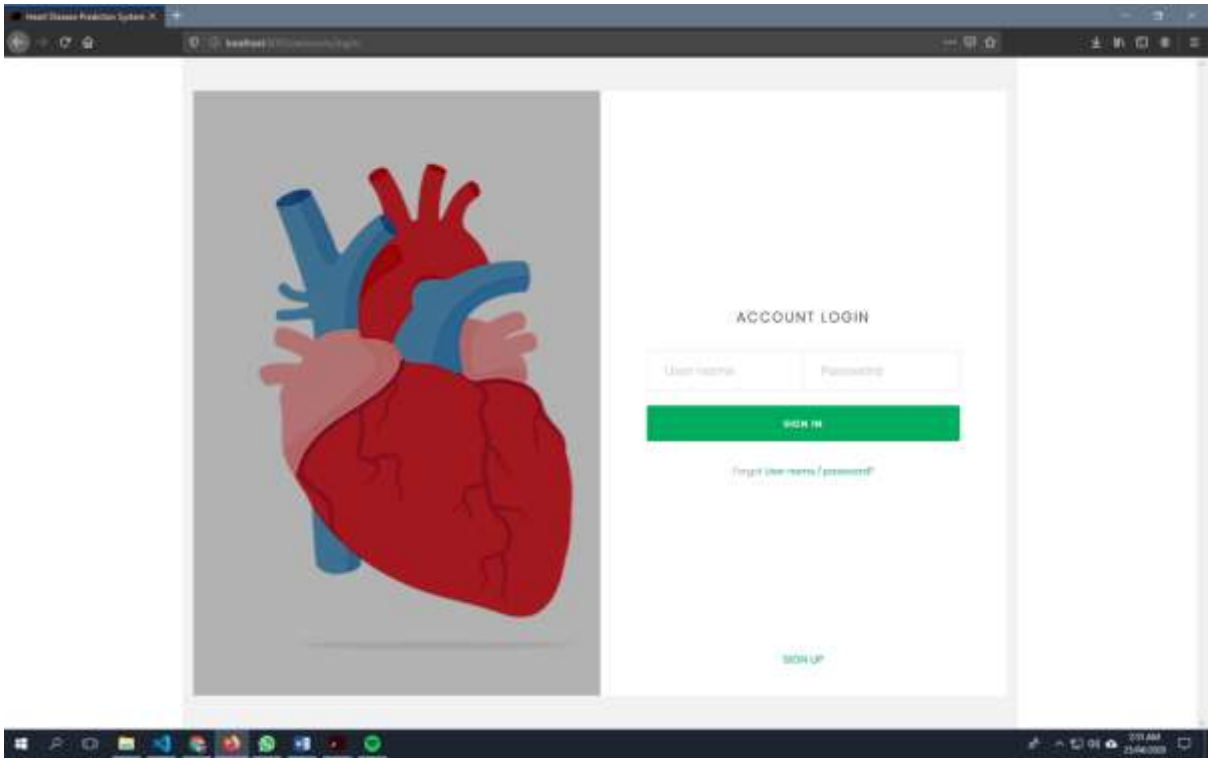
Purpose

This section holds the authenticity of the user and contains the following elements:

- Login Form
- Redirect to registration form
- Redirect to forget password page

Navigation & User Interaction

This user is required to insert the right email and password. After successful login, the user will have further options to see and explore.



Heart Analysis

Purpose

This section allows the user to submit their symptoms to the system:

- Heart Analysis Form.
- Submit button symptoms to the system for heart disease prediction.

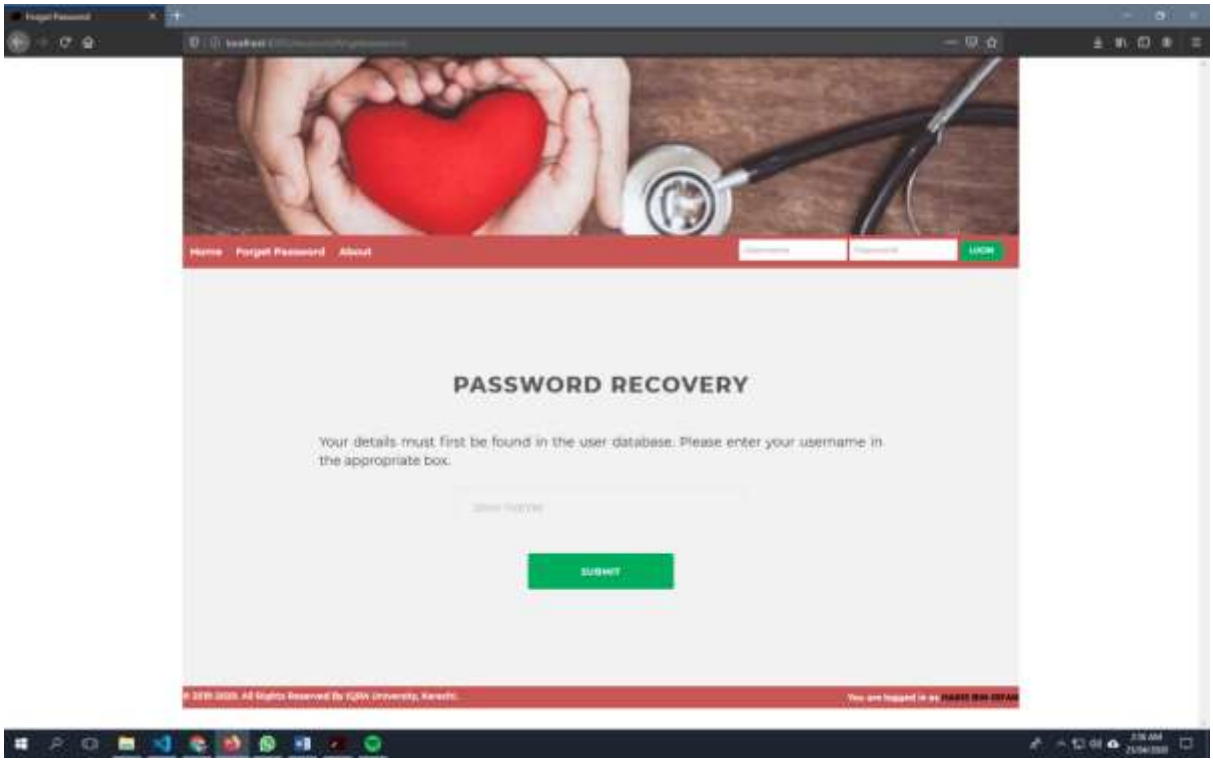
Navigation & User Interaction

The user can navigate to this section first by clicking Heart Analysis icon in the menu bar the field submit user symptoms about their health to the system using fields which include (Chest pain sex, age, Resting ECG and Thal, Slope, Cholesterol etc) to the system for heart disease prediction.'

Password Recovery

Purpose
This page allows the user to recover its password through email confirmation.

Navigation & User Interaction
The user is required to insert the registered email address and click the "Reset My Password" button. A forgot password email notification "Please reset your password by clicking here" is send to the user from the heartdisease.prediction@gmail.com which allows the user to recover current/changed password.



Analysis History

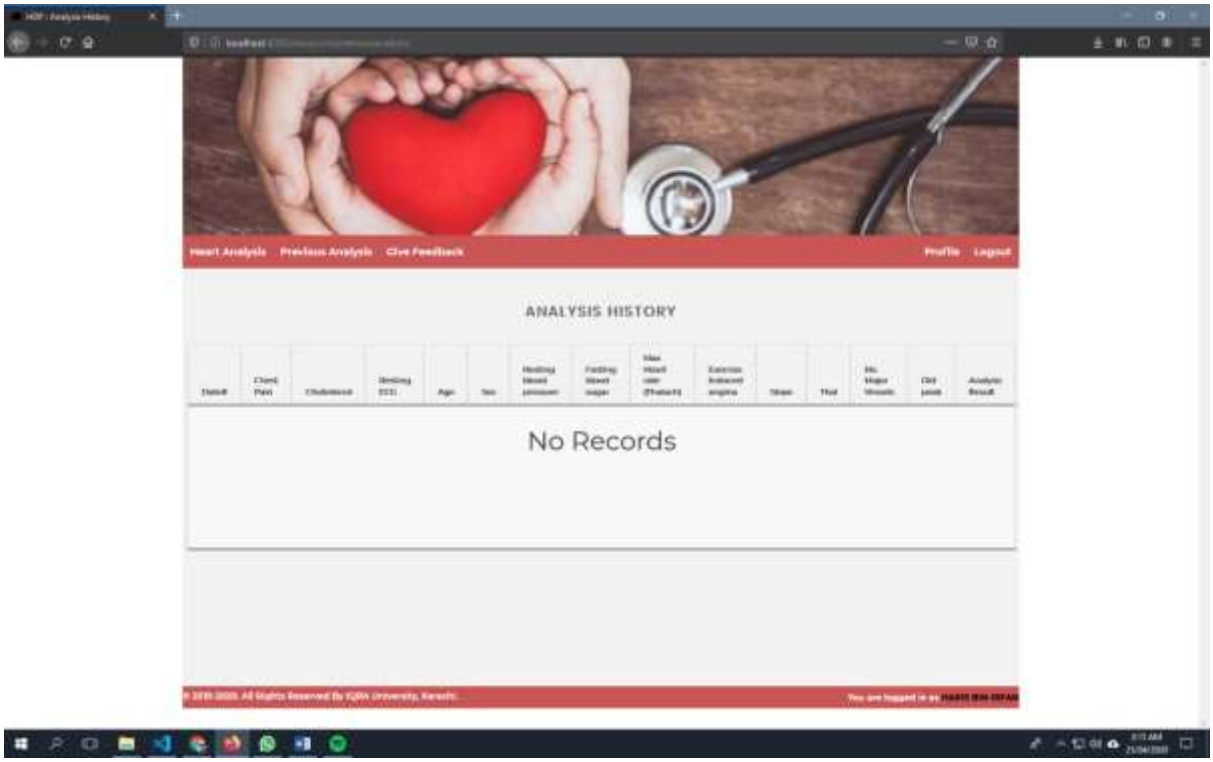
Purpose

This section allows the user to their previous analysis records:

- Analysis History page.

Navigation & User Interaction

The user can navigate to this section first by clicking Analysis History icon in the menu bar a table with all the field and with all the information about the user stored in our database.



Profile

Purpose

This section allows the user to edit personal credential and update their accounts:

- Edit Form.
- Save button to submit a request for updating an account.
- Change Password Form.

Navigation & User Interaction

The user can navigate to this section first by clicking profile icon in the menu bar then by clicking the Edit button on profile page the field will get enabled with all the information about the user stored in our database. The user can edit this information so the system can keep updated information about the user.