USER GUIDE

FOR STROKE PREDICTION

Review & Approval

Document Version History

Version	Primary Author(s)	Author	Date Completed
<1.1>	<Artem Mercer, Vincenzo Mezzio>		5/5/22

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1   Introduction

This document is the user guide for the Stroke Prediction web application, a device designed by Artem Mercer and Vincenzo Mezzio, published by Coding4Cure. It is recommended that you read this instruction manual carefully before use.

Please, read carefully the precautions with ⚠ symbols, to ensure that the device is used in best conditions and in complete safety.

1.1   Conventions

To avoid all physical and material damage, this document splits safety instructions into 3 danger levels.

⚠	ATTENTION
	Hazardous situations which can cause material damage or lead to moderate serious injury.

⚠	WARNING
	Hazardous situation which can cause serious/ fatal injury.

Required parameters are missing or incorrect.	Hazardous situation which could immediately cause serious/ fatal injury.

1.2   Intended use

The software is intended to assist people in foreseeing themselves having a stroke.

2   Precautions

2.1   Compliant Use

The use of this device is reserved to neurologists or under their control.
Any inappropriate use is forbidden.

The user shall:
- Only use non-defective products.
- Protect patients, third parties, other operators, assistants and themselves from all danger.

The user must check the safety of operation and the condition of the device before each use.

Verify that the product is operational at all times and keep it in good working conditions.

Only verified Coding4Cure technicians or the developers are authorized to repair the Stroke Prediction product.

2.2 *Safety instructions*

A small percentage of individuals may experience a seizure when exposed to visual images including flashing lights. If you are at risk, immediately stop using the application and consult a doctor if you experience any symptoms. Symptoms include lightheadedness, altered vision, eye or face twitching, jerking or shaking of the arms or legs, disorientation, confusion, or momentary loss of awareness. Seizures are also able to cause a loss of consciousness that result in injury from falling down. To reduce risk, use the application in a well-lit room and do not use it if you are fatigued or drowsy.

2.2.1   Electromagnetic interferences

The device is certified compliant with current electromagnetic compatibility standards.

⚠	ATTENTION
	Users should ensure that no electromagnetic interference raises an additional risk. So as not to disturb the proper operation of electromagnetic devices, it is recommended complying with the recommended separation distances for the device.

2.2.2   Electrical connection

| **Required parameters are missing or incorrect.** | **DANGER**
 Bad electrical connection - ELECTRIC SHOCK - ELECTROCUTION

 Check that the supply voltage is the same as that shown on the device. Check the supply cable before each use.
 Never plug or unplug the device to/from a wall socket with damp hands.
 Any other use or connection of devices or peripherals to a port (USB, serial, parallel …) may create new risks and may require additional risk analysis |

2.3 *Malfunction*

In case of malfunction:
- Immediately stop using the device.
- Try to identify or eliminate the cause using the description in this document (section Error messages, troubleshooting).
- If it is not possible to identify or eliminate the cause using this document, switch the device off and call Coding4Cure After-Sales Department (see Manufacturer section at the end of this document).

3   Installation - uninstallation

Prior to usage of the software, the user must install a working version of Python 3.7, 3.9 or higher. To ensure you have a working version of Python on your computer, open up the terminal / command prompt (cmd) and type "python –version". The terminal should display the version of Python on your system. An example is if it outputs "Python 3.8.7".

To install the software for use in a virtual environment, follow the download link which includes all of the project files. The main folder is named "MLProject".

To uninstall the software, you may simply remove the MLProject folder and all files within it as this is the header folder which contains all of the project files.

4 Getting started

Once the project files have been downloaded, open the terminal / command prompt (cmd) on your computer.

```
C:\Users\Cenzo Oh\MlProject>python --version
Python 3.8.7
```

Redirect to the location of the folder. By default, the command prompt will have the directory "C:\Users\(Your Username)\". If the installed project is located in this directory, type "cd mlproject". Otherwise, change the directory to the location of where you installed the project.

```
Command Prompt - py -m application

Microsoft Windows [Version 10.0.19043.1645]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Cenzo Oh>cd mlproject
```

Once in the MLProject folder, activate the virtual environment by typing "Scripts\Activate". This step is successful if you see the name of the virtual environment before the path directory in your terminal. It should display: "(MlProject)" followed by the directory path.
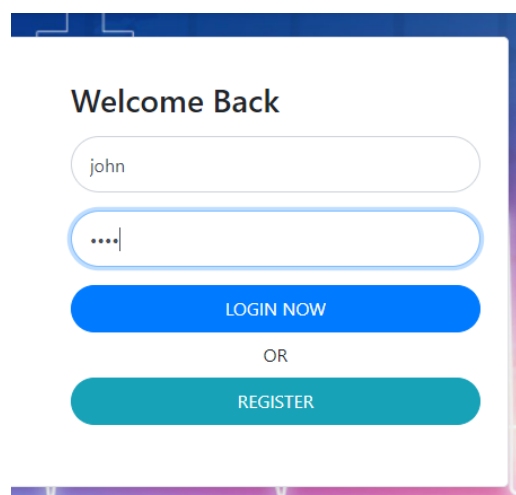
```
C:\Users\Cenzo Oh\MlProject>scripts\activate
```

Next, change directory to run the python application by typing "cd backendfrontend". This changes the directory to the appropriately named folder where the executable python file is located.

```
(MlProject) C:\Users\Cenzo Oh\MlProject>cd backendfrontend
```

Now type "python application" or "py -m application" to run the python application. The terminal should output that the program is running on localhost http://192.168.1.141:5000/.

```
(MlProject) C:\Users\Cenzo Oh\MlProject\BackEndFrontEnd>py -m application
 * Running on http://192.168.1.141:5000/ (Press CTRL+C to quit)
```
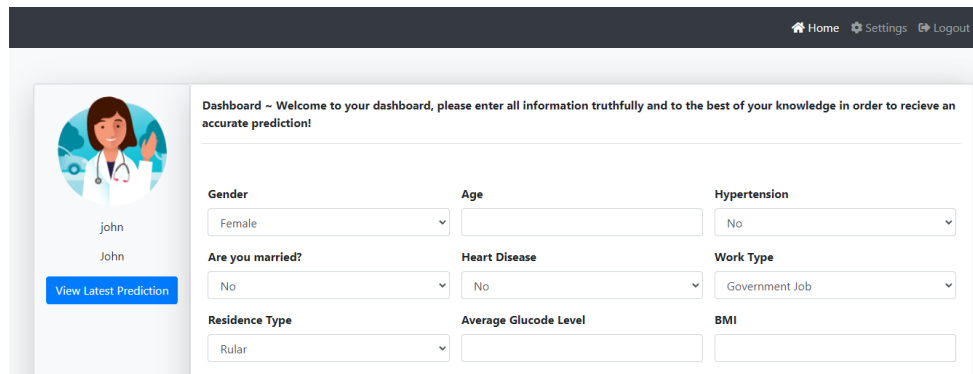
In your web browser (any current web browser is acceptable), type in this web address the terminal has output and the browser should redirect you to the login page of the application.

When you first launch the web application, you will not have an account. You can click on the "Register" button to create a new account. This will bring you to the Create Account page. Simply enter a username, your name, and your password. Once you have done this, you may click register now and will be redirected to the Dashboard page.

The Dashboard page prompts you with information to fill in to predict your likelihood of having a stroke. This page prompts you with the following options:

- **Gender** - between Male and Female
- **Age** - in years
- **Hypertension** - a yes or no prompt. Having Hypertension means you have a defined blood pressure above 140/90. Consult your doctor if you do not know if you have Hypertension.
- **Married** - another yes or no prompt regarding your marital status. If you are divorced, single, or widowed, you may select no for the prompt.
- **Heart Disease** - a yes or no prompt regarding if you have any heart conditions. This may include coronary artery disease (CAD) and any other conditions that affect your heart.
- **Work Type** - Lists several general types of work including if you work for the government, work for a private company, work with children (such as a babysitter or teacher), self-employed (entrepreneur), or if you have never worked.
- **Residence Type** - Either rural (countryside) or urban (city).
- **Average Glucose Level** - You may list your average glucose level with two decimal places. The program will accept values between 55.1 to 272. To calculate your average glucose level, you may consult your doctor or take an A1C test.
- **Body Mass Index (BMI)** - You may list your BMI with two decimal places. The website includes a calculator to determine your BMI with your height and weight. There are four categories / ranges your BMI may fall in including; Underweight (below 18.5), Normal or Average (18.5 - 24.9), Overweight (25.0 - 29.9), Obese (30.0 and above).
- **Smoking Status** - This regards your condition of smoking including but not limited to cigarettes, marijuanna, vape, cigar, etc. You may select Unknown if you do not know if you have ever smoked, Formerly Smoked, implying you do not currently smoke but have smoked in the past, Never Smoked, implying you have not and do not currently smoke, Smokes, implying you currently smoke.

Once all the fields have been correctly filled in, you may select the green Submit button to process your results. If you would like to remove all of your entries to start over, you may select the red Clear button right above the Submit button.
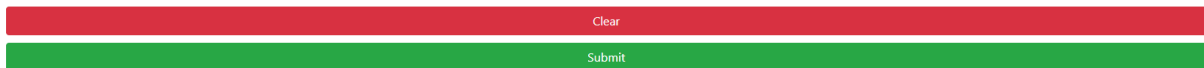
After selecting the submit button, the web site will display a new page that provides you with the results of predicting if you have a stroke. If the algorithm predicts you will not have a stroke, it will display an infographic regarding how to prevent a stroke. The infographic will help you stay safe even if it predicts you will not have a stroke. If the algorithm predicts you will have a stroke, it will display a map of nearby doctors that can assist you such as dietitians and nutritionists. It will also display a different infographic to help you in terms of what habits to change to lower your chance of having a stroke.
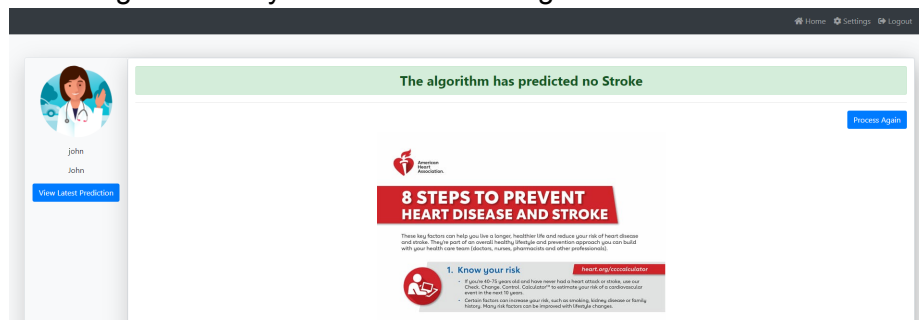

If you would like to input new information for another prediction, you may select the Process Again Button and this will bring you back to the Dashboard page.
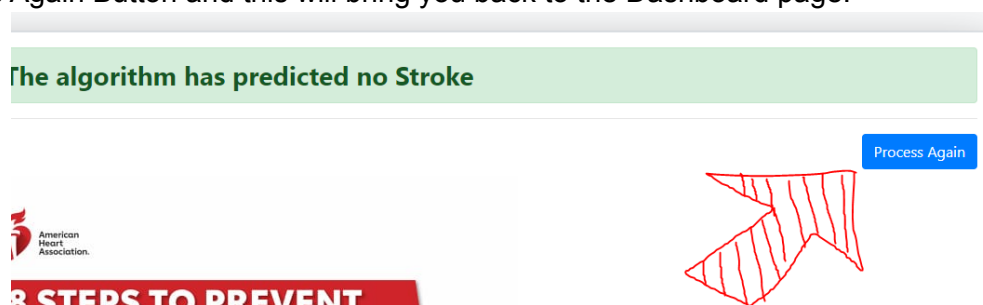

5   Advanced functions

If you would like to see your last results, you may look at the left side of the web site which displays your profile picture, username, and name. A button is located underneath named View Latest Prediction. Clicking this button will redisplay the prediction based on the last input you have submitted.
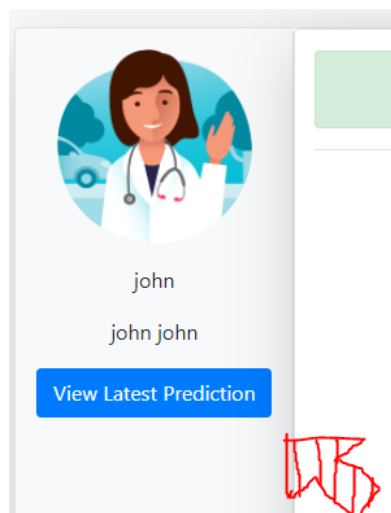
The top of the web site includes a navigation bar. The Home button brings you to the Dashboard page. The Settings button brings you to the Settings page, in which you can update your profile. The logout button will log you out of the website and bring you back to the Login page.
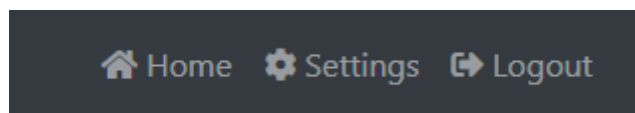
In the settings page, the navigation bar is displayed on the left side of the screen. This includes the same options that are present on the navigation bar outside the settings page. In the settings page, you are able to update your name or delete your account. Both actions require you to fill in your password prior to updating the account.
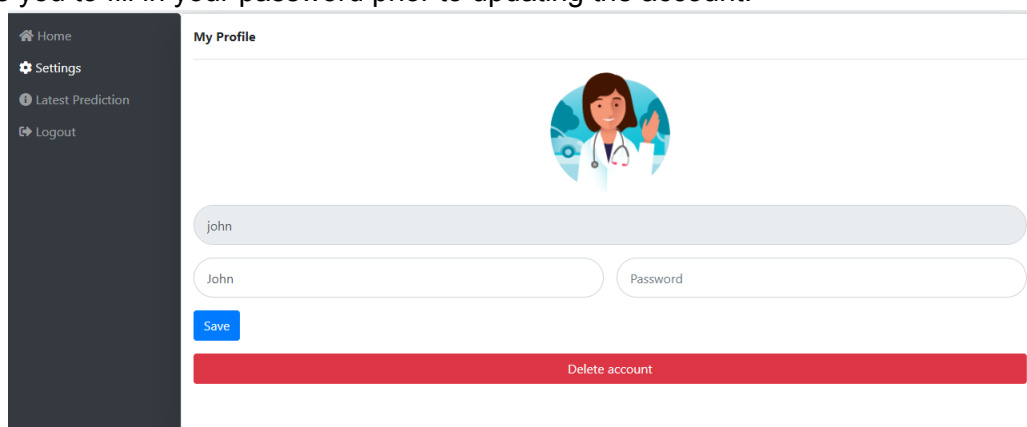
6   Troubleshooting, Error Messages

 This section is intended to help users, should a problem occur.

In the event of abnormal operation, immediately stop using the device and call Coding4Cure After-Sales Dept.

If it is not possible to locate or eliminate the problem using this section, or if the dysfunction is still present, switch off the device and call Coding4Cure After-Sales Dept.

Required parameters are missing or incorrect.	DANGER **Never try to repair this device alone**

Error message	Description
"Python is not installed, please download and install…"	Python is not detected in the system, attempt to downgrade the version of Python or install Python directly from the website.
"Not enough disk space"	Empty disk by moving unnecessary files into the recycle bin or select the Optimize Drives feature in your settings.
"The system cannot find the path specified"	Ensure you are in the correct directory, refer to Section 4 Getting Started.

Malfunction	Causes	Solutions
Can not connect to website	• Application not launched through the terminal	• Run the application through your computer's terminal, refer to Section 4 Getting Started.
The PC doesn't start	• It is unplugged	• Plug the power supply cable into the outlet

7   Warranty

The Stroke Prediction web application is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of the software.

8   Legal Notices

Permission is granted to anyone to use the Stroke Prediction web application for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

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9   Manufacturer Contact Information

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