

Self-Assessment Diagnostic Tool Proposal (Fall 2019)

Thomas Logan, Vincent Manoli, Brett Bivens

Abstract

The Self-Assessment Diagnostic Tool, otherwise known as SAD, is intended for quick self medical evaluations for users that do not have the time to visit a medical facility. SAD will ask the user what symptoms they are currently experiencing and based on that information SAD will give possible remedies and over-the-counter medication that the user could take. The idea isn't to replace a doctor but simply help the user alleviate the symptoms until either the symptoms go away entirely or the user goes to see a trained medical professional.

1. Introduction

The SAD tool is an interactive self-diagnostic tool designed with the intention of allowing individuals to narrow down the possible causes of common ailments. It is not intended to replace professional medical advice but can be used as a preliminary assessment to determine if a doctor's visit may be necessary.

Information will be presented using easy to understand interactive graphical menus. Users will select the appropriate area of the body that represents the source of their discomfort and will then be presented with a list of possible symptoms for that area of the body in a check box format. The program will then search a compiled database of common ailments or injuries to that body part and show the user a list of up to the top 5 most probable causes with possible treatments. This program is intended to assist injured or sick people with non-life-threatening issues that do not currently have the means to seek a professional medical evaluation to receive a broad level evaluation of their medical needs.

1.1. Background

A basic understanding of low level and layman's medical terms is recommended for a better understanding of some of the more complex parts of this paper. This project was chosen because it combines multiple different elements and functionalities of the proposals of each member of the group into a single application.

1.2. Challenges

The biggest challenges presented for this program will be writing the algorithm that connects a user's input with an appropriate possible diagnosis, creating intuitive graphical user interfaces appropriate for users of multiple ages and educational backgrounds, and creating a responsive and accurate database.

2. Scope

The program will be considered complete when it is able to do three primary objectives. First, present users with a concise list of up to 10 "Yes/No" questions most related to the selected body part. Secondly, return up to 5 possible causes for the user's discomfort. Lastly, return a recommended treatment for the most probable cause of the user's discomfort.

The current stretch goals we have set for ourselves include 4 addons to the program. First, Add confidence interval percentage to the diagnosis screen. Secondly, expand the question system to a "1 - 5 scale", where it may apply, from the current "Yes/No" format. Thirdly add a recommendation of a doctor in the user's town if it is determined to be required by question responses. Lastly, present user with locations to purchase any over-the-counter medicines recommended.

2.1. Requirements

2.1.1. Functional.

- Users need to have a selected gender – This will allow the program to decide either male or female templates to use and exclude diagnoses that are not possible based on the gender selected.
- Program will give a list remedies – These remedies will be dependent on the type of ailment.
- Program will give all possible ailments – These ailments will be dependent on the user's symptoms.

Use Case ID	Use Case Name	Primary Actor	Complexity	Priority
1	Selecting A Body Part	User	Low	1
2	Selecting Symptoms	User	Low	1
3	Enter Starting Information	User	Low	1

TABLE 1. USE CASE TABLE

2.1.2. Non-Functional.

- Internet Independent - The program will be self contained on the user computer (Unless one stretch goal is met)
- User Input dependent - The program require user input to give an accurate answer for the user.

2.2. Use Cases

Use Case Number: 1

Use Case Name: Selecting A Body Part

Description: Once a user has entered the beginning information the user will then select a body part then an interface will appear with a list of possible symptoms.

- 1) User navigates to the page of the image of a human body (picture will either be male or female based on the user's gender)
- 2) User left-clicks on a body part. (The body part will become highlighted based on where the mouse is located on screen)
- 3) An interface will appear allowing the user to select by left-clicking on "Explore Causes For X" where X is the body part selected.

Termination Outcome: The user is now at the interface for selecting symptoms for the body part selected. (see Figure 1)

Use Case Number: 2

Use Case Name: Selecting Symptoms

Description: Once a user has selected the body part the user will then have a list of symptoms that the user will pick from.

- 1) User navigates to the page with listed symptoms of a selected body part. (see Figure 1)
- 2) User left-clicks on how ever many symptoms apply for the current user.
- 3) User left-clicks on "continue" to go to the next page.

Termination Outcome: The user will now be brought to a page of listed remedies.

Use Case Number: 3

Use Case Name: Enter starting Information

Description: User will enter a small amount of personal information so the program can make a more personal experience for the user.

- 1) User Starts up SAD and is prompted with the starting interface. (see Figure 2)
- 2) User enters his/her name under the "My Name Is: " Section.
- 3) User left clicks on either "Man" or "Woman" to select a gender.
- 4) User enters his/her age under the "My Age is: " Section.

Termination Outcome: The user will now be brought to the Select Body Part Interface. (see Figure 4)

2.3. Interface Mockups

At first, this will largely be completely made up, as you get further along in your project, and closer to a final product, this will typically become simple screenshots of your running application.

In this subsection, you will be showing what the screen should look like as the user moves through various use cases (make sure to tie the interface mockups back to the specific use cases they illustrate).

Self Assessment Diagnostic Tool

version (1.01)

RIGHT ARM SYMPTOMS

Do any of these symptoms describe the problem you are having with your right arm today?

Please select all the symptoms that you are currently experiencing.

☐ Numbness

☐ Tingling


☐ Muscle Pain

☐ Muscle Stiffness

☐ Swelling

☐ Joint Pain

CONTINUE



This software is for self evaluation purposes only and should not be considered a substitute for professional medical advice.

Figure 1. Example of Symptom Interface

Self Assessment Diagnostic Tool

version (1.01)

Welcome to the Self Assessment Diagnostic Tool.

Let's see if we can figure out what's making you so SAD today.

To get started, we need to get to know you a little better. This will help us focus on health issues that are more likely to affect you.

Just answer the questions below:

My Name is:


I Am A:

☐ Man

☐ Woman

My Age is:

CONTINUE



This software is for self evaluation purposes only and should not be considered a substitute for professional medical advice.

Figure 2. Example of Entry Screen

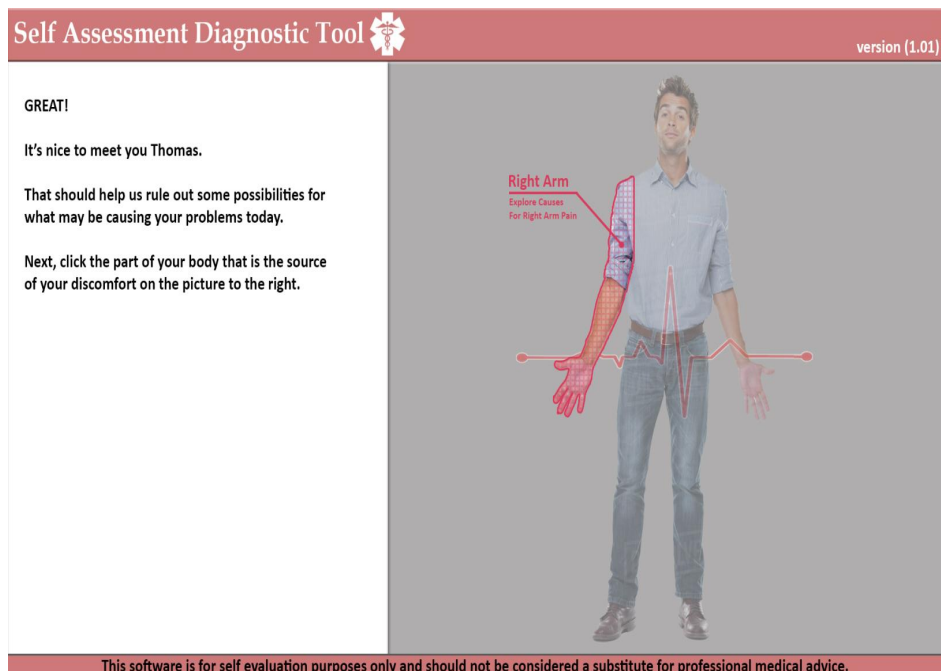


Figure 3. Example of Right Arm Selection

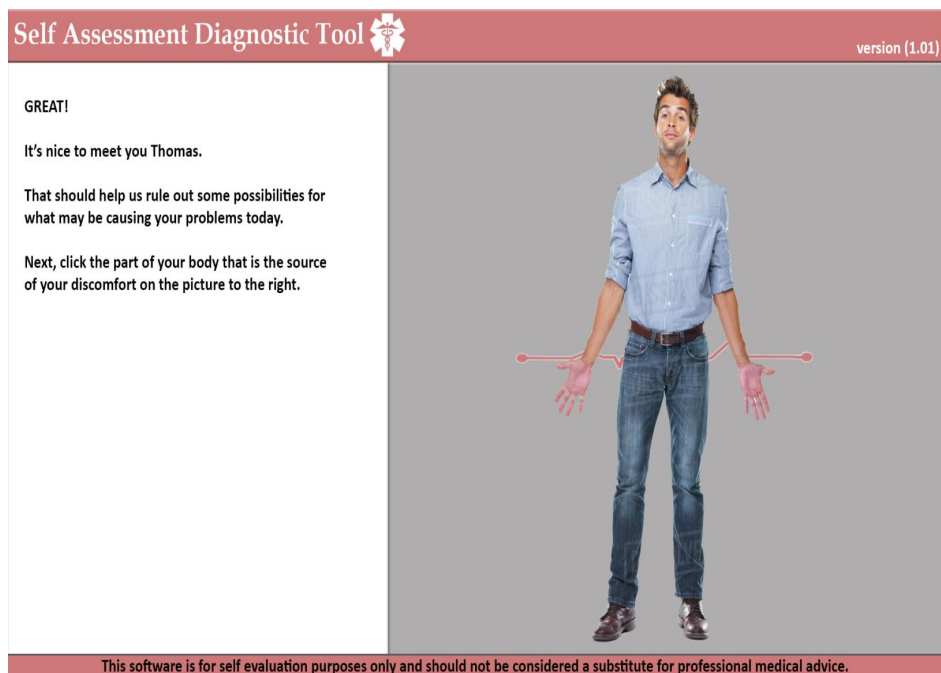


Figure 4. Example of Starting Body Part Selection