Outreach Grip Strength Tool Manual

By: Dan Gibbons

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Installation

The Outreach Grip Strength Tool is coded in MATLAB, and without a native installation of MATLAB, would not be able to run. To circumvent this, MATLAB has what is called the MATLAB Runtime, which is effectively a program that runs a barebones MATLAB in the background so this tool may run. This section will walk you through the installation step-by-step so you can run this tool natively and without MATLAB itself installed on your computer.

Step 1 – Download and Unzip

Depending on how you've received this software, you'll most likely have received it as a zip file as in Figure 1.

Simply open up the zip file in your file explorer (or by clicking 'open file' as displayed in figure 1) and you'll be presented with Figure 2.

You'll need to extract everything from the zip file by either clicking 'Extract All' (as highlighted in Figure 2) or using an external program such as 7zip or WinRAR.
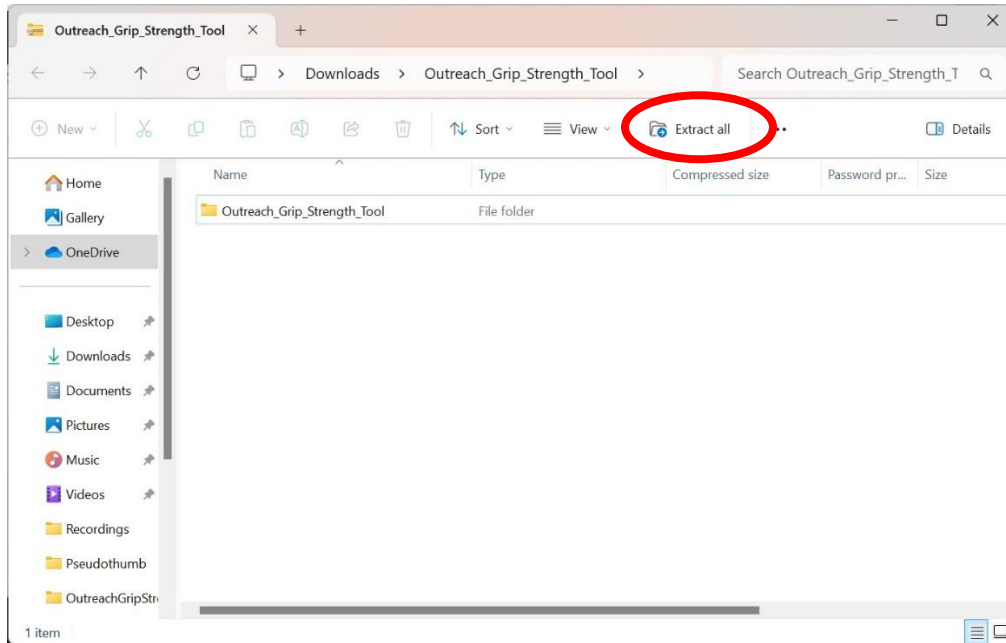

Fig. 1

Fig. 2

Step 2 – Find and Run the Installer

Once you've extracted everything from your zip file and navigated to your newly extracted folder, you should end up what looks like Figure 3 (minus this manual).

If, on the off chance, your extracted files still look like Figure 2 (without the 'Extract All' option because you've already done this), simply navigate one folder down into the 'Outreach_Grip_Strength_Tool' Folder until you have what looks like Figure 3.

The following files should be present:

1. Outreach_Grip_Stength_Tool.m
   This is the raw MATLAB code, included incase anyone wants to tweak it to their own needs
2. for_testing folder
   This folder holds the executable and many other irrelevant files used for testing. It's recommended to avoid this folder
3. for_redistribution folder
   This folder is where the MATLAB Runtime Installer lives, and where you'll need to navigate to next
4. for_redistribution_files_only folder
   This folder holds the executable, the splash screen for when the program starts, and a readme.txt file that details more information about the runtime installer and its requirements
5. Installation_Usage_Manual.pdf
   This file

As detailed above, navigate into the 'for_redistribution' folder (Figure 3). You'll find what should look like Figure 4. – the 'MyAppInstaller_web.exe' file. Simply double click on this file to start the installation process for the MATLAB Runtime program.
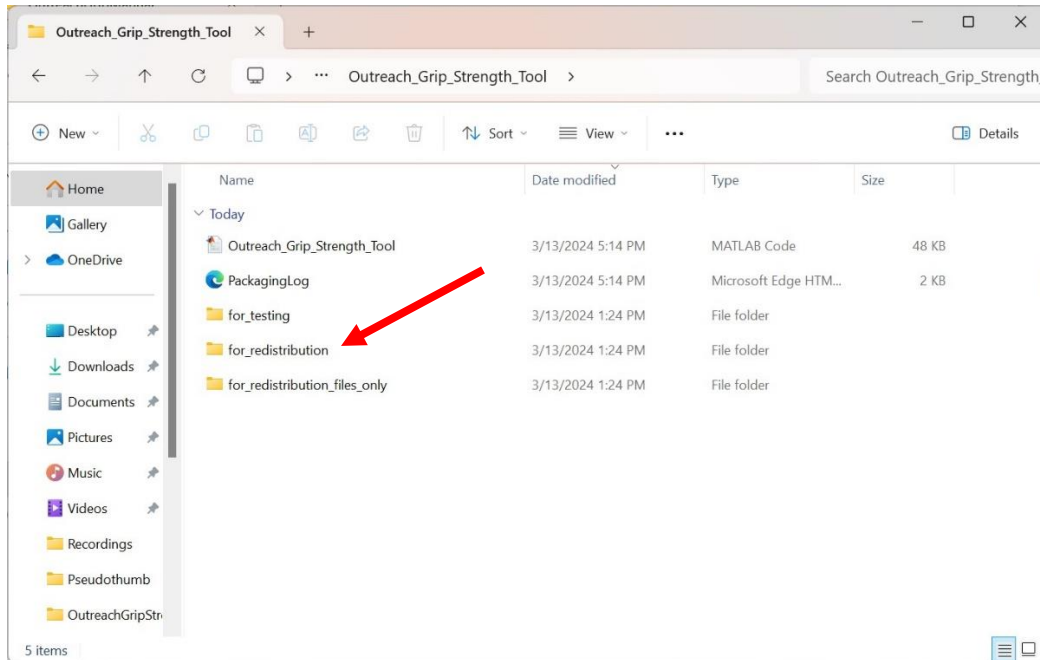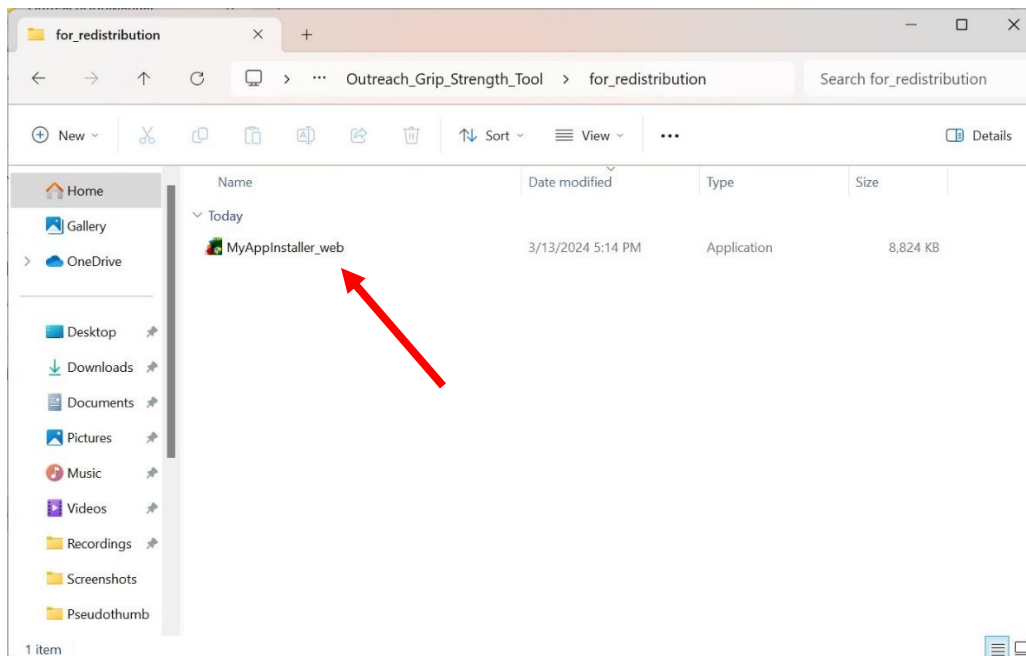

Fig. 3

Fig. 4

NOTE: At this point, after running the .exe file, you may be presented with a warning screen as in Figure 5a. Do not panic. This is simply your operating system attempting to protect you from malicious software (which this program is not). Simply select 'More Info' if running this on a Windows computer, at which point a 'Run Anyway' button should appear at the bottom (Figure 5b). Click this button and you should be good to go.
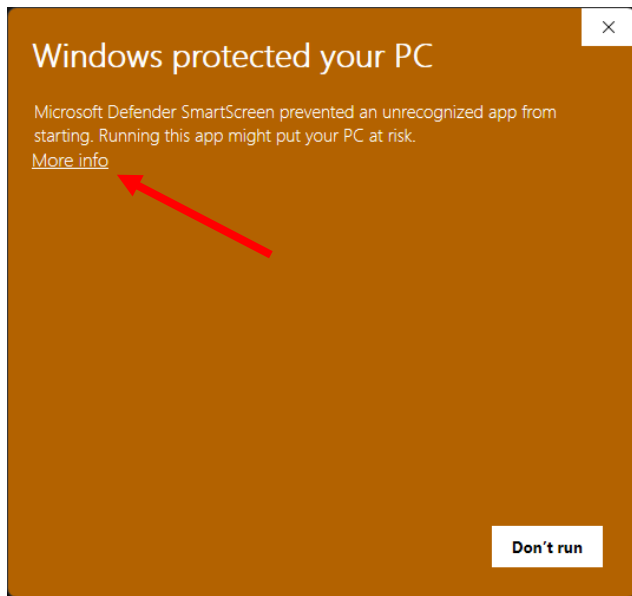

Fig. 5a

Fig. 5b

You should be greeted with what looks like Figure 6, which is just a splash screen preparing your computer for the installation. Let this run. It should change as soon as it's done.

Once the preparation is complete, you should now be looking at Figure 7, at which point you will now start making decisions for installation.

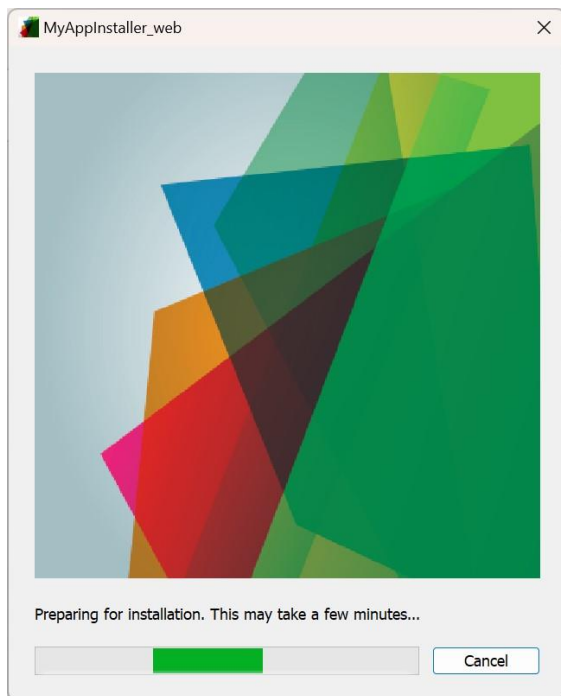NOTE: Though most of the information should look the same as what Figure 6 displays, the version number may vary slightly. As of this writing, version 1.1 is the latest release.
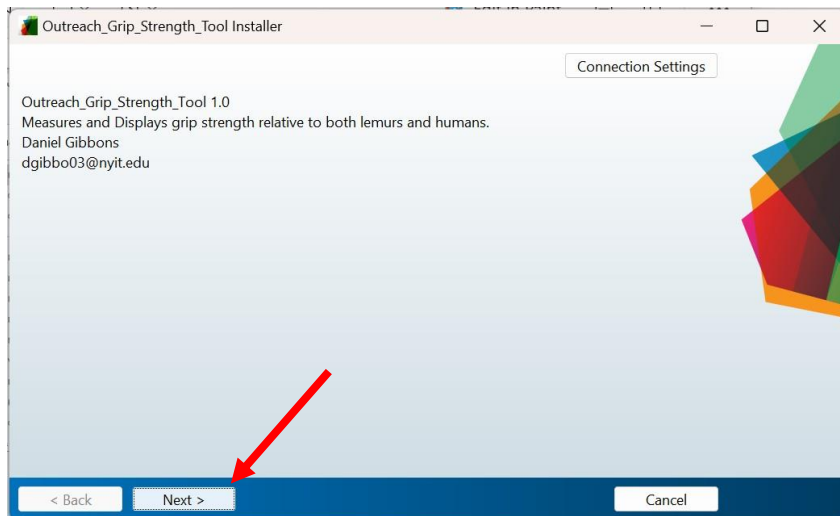

Fig. 6

Fig. 7

Step 3

3a.

With your screen looking like Figure 7, you can click 'Next >' to progress along the installation process.

3b.

You should now be looking at Figure 8. This simply allows you to select where the metadata, component files, and .exe program will be installed. The .exe file to run the program will end up here under an 'application' folder, and you can eventually run it using this file, but there will be an easier way detailed later. Optimally, you can click 'Add a shortcut to the desktop' for ease of use running the program in the future, and in fact this option is recommended. Once this has been decided, click 'Next >'
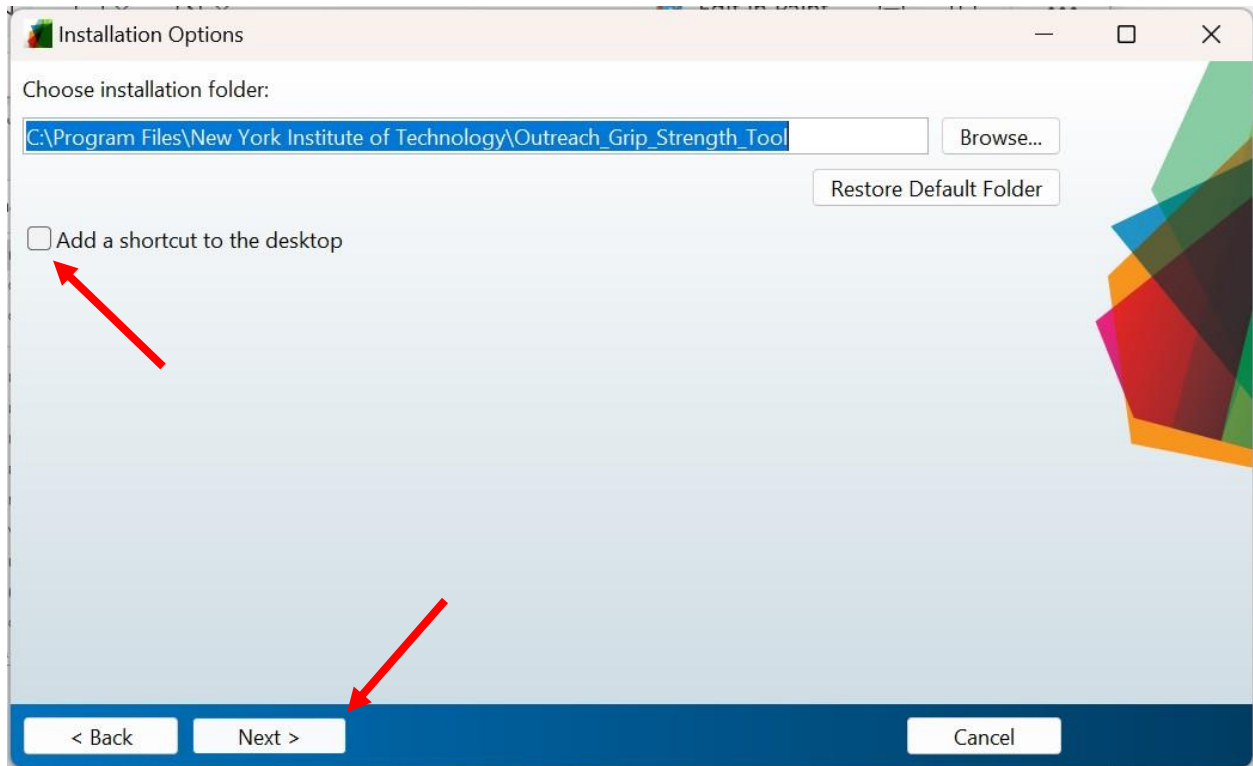
Fig. 8

3c.

Figure 9 should now be the current screen up. This details where the MATLAB Runtime Environment will be installed, and it's recommended to leave the default folder as is. Once you are ready, click 'Next >'.
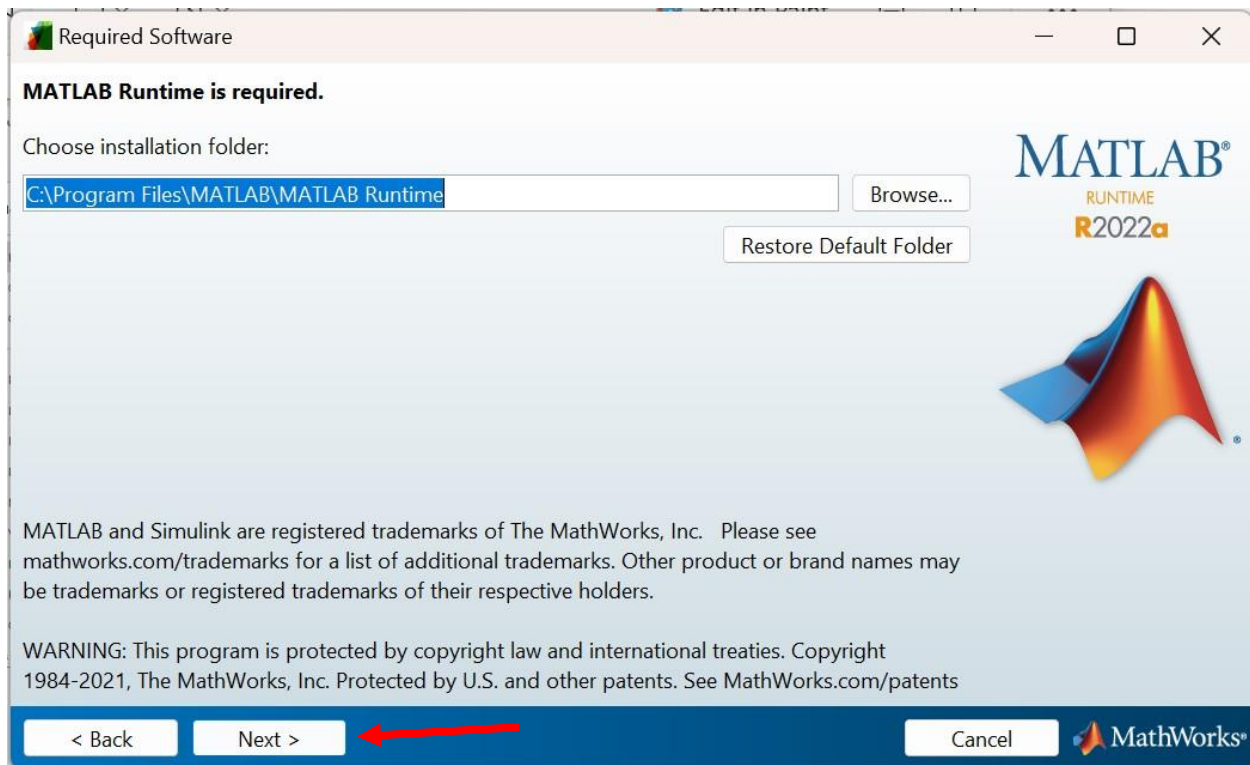
Fig. 9

3d.

Figure 10 will now be the screen you should be seeing. This is simply a user license agreement MATLAB uses to make sure their runtime software isn't used illegally and what not. Simply select 'Yes' after reading through the license agreement and click 'Next >'.
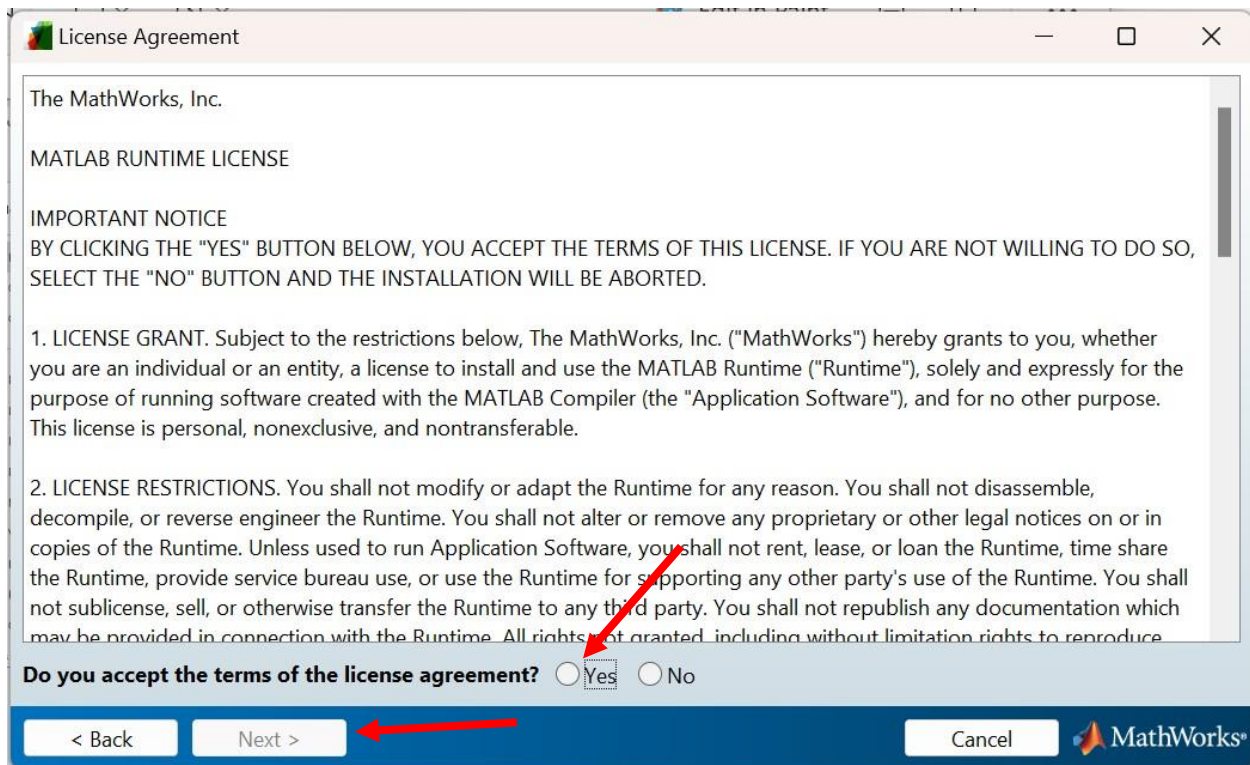
Fig. 10

3e.

You should now be staring at Figure 11. This is simply a confirmation of all the decisions you've made before this point, as detailed by the text which should be displayed on this screen. Once you've confirmed all the details are correct, click 'Install >' and you'll be presented with Figure 12.
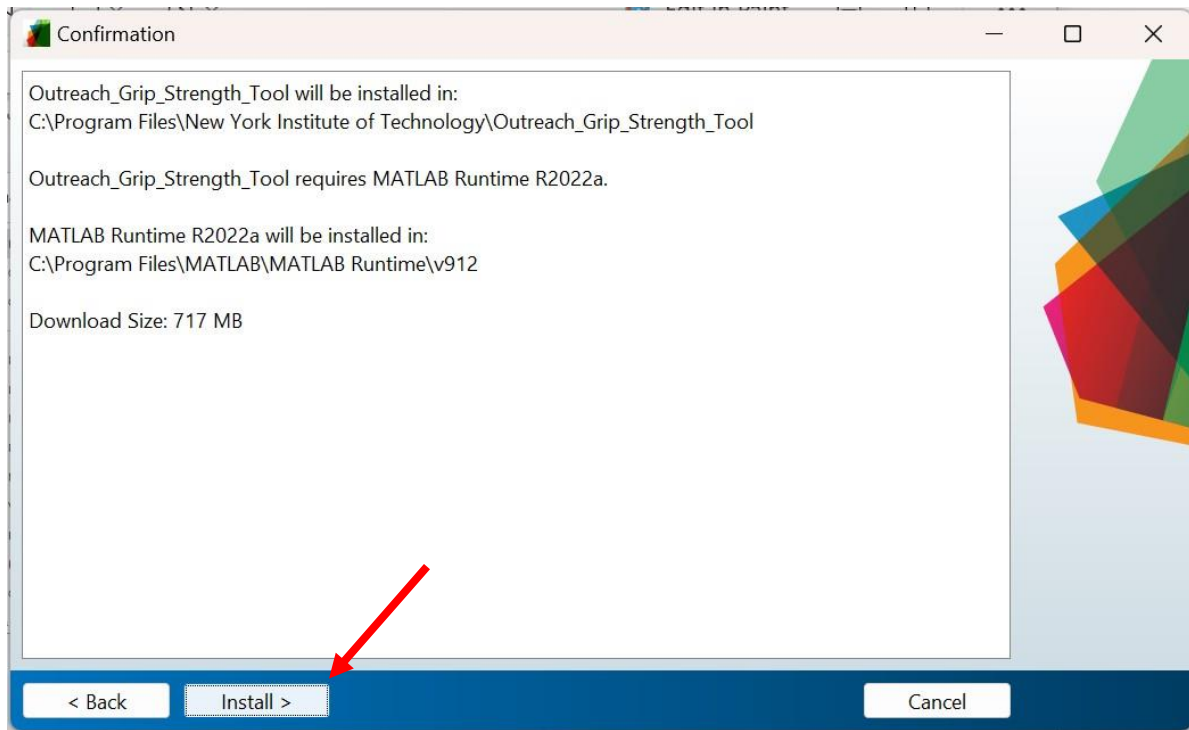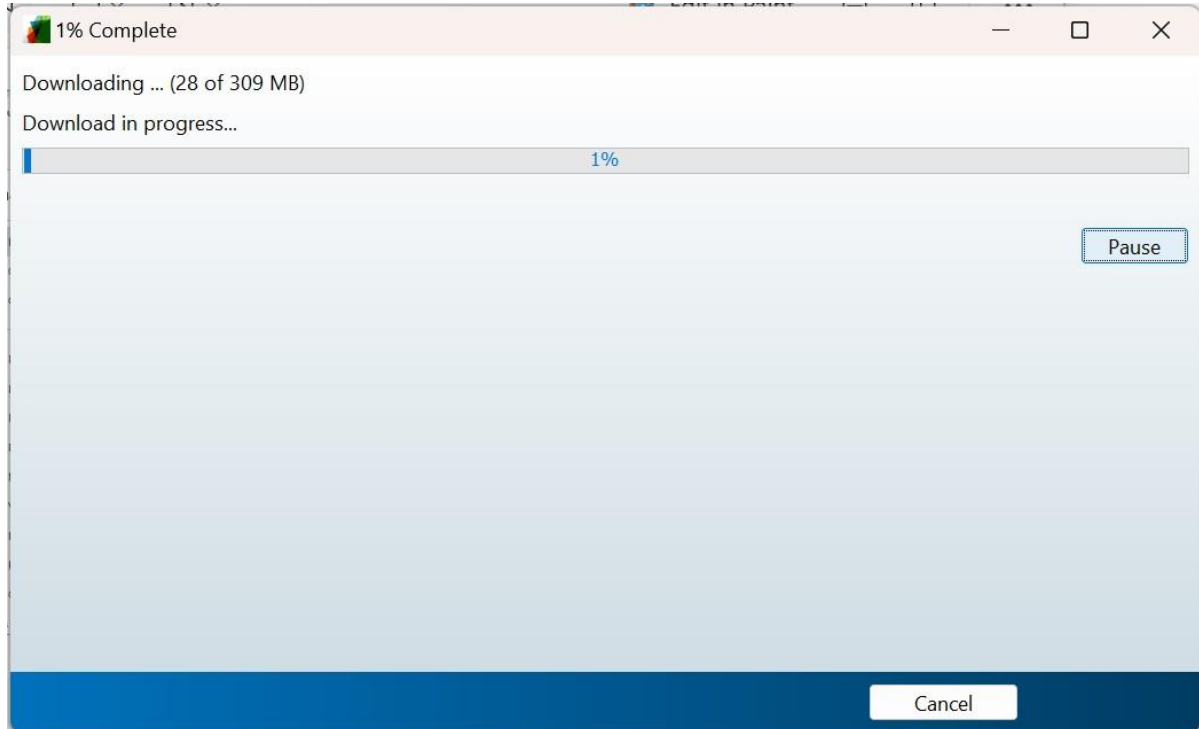
Fig. 11

Fig. 12

3f.

Allow the downloader to run to completion (this will take a little while), and when completed, you should be presented with Figure 13, confirming your installation has completed successfully.
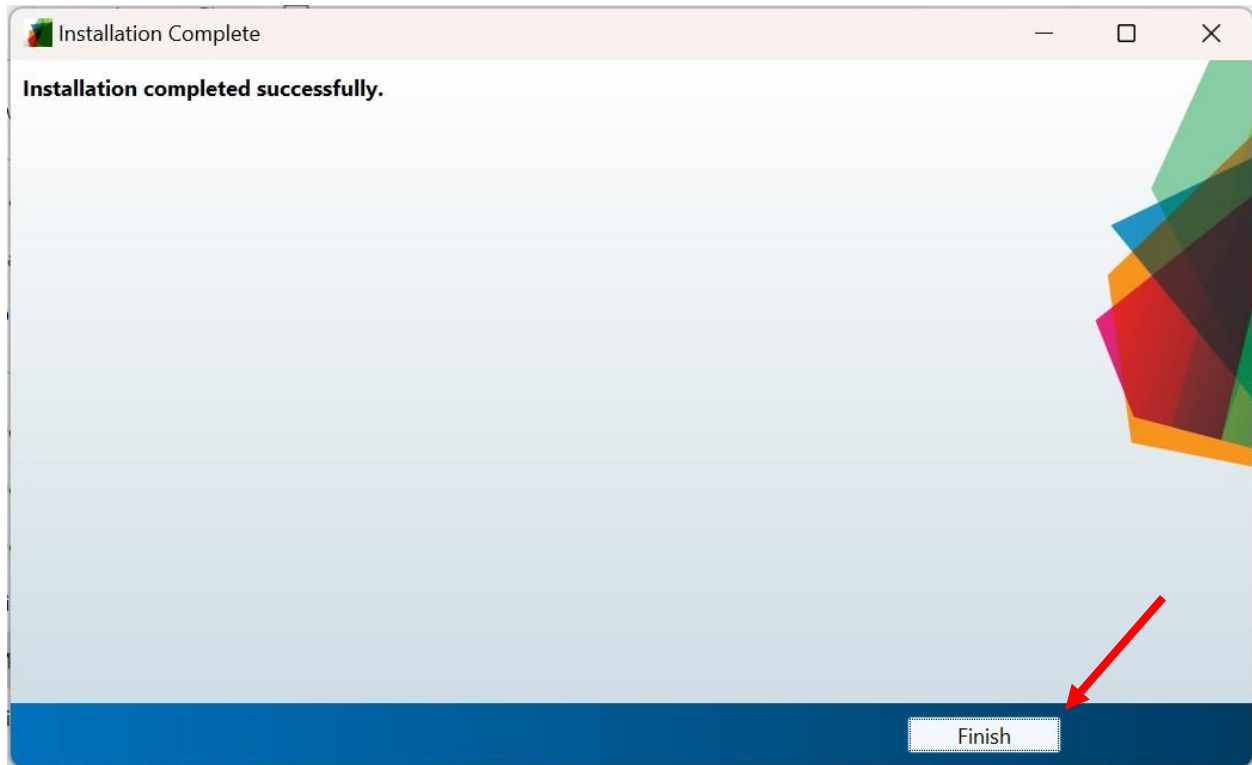

Fig. 13

Step 4

The MATLAB Runtime Environment is now successfully installed as is your Outreach Grip Strength Tool Program. You may navigate to the location selected and detailed in step 3b. above to run the .exe program, but hopefully you've selected to add the shortcut to your desktop. If neither of these options work or are of interest, you may navigate to the for_redistribution_files_only folder detailed in Step 2 above, where you'll find the .exe file for running the Program. You may double click the .exe file or the Desktop shortcut to begin running the program. A splash screen like Figure 14 should come up, before Figure 15, showing the program itself.
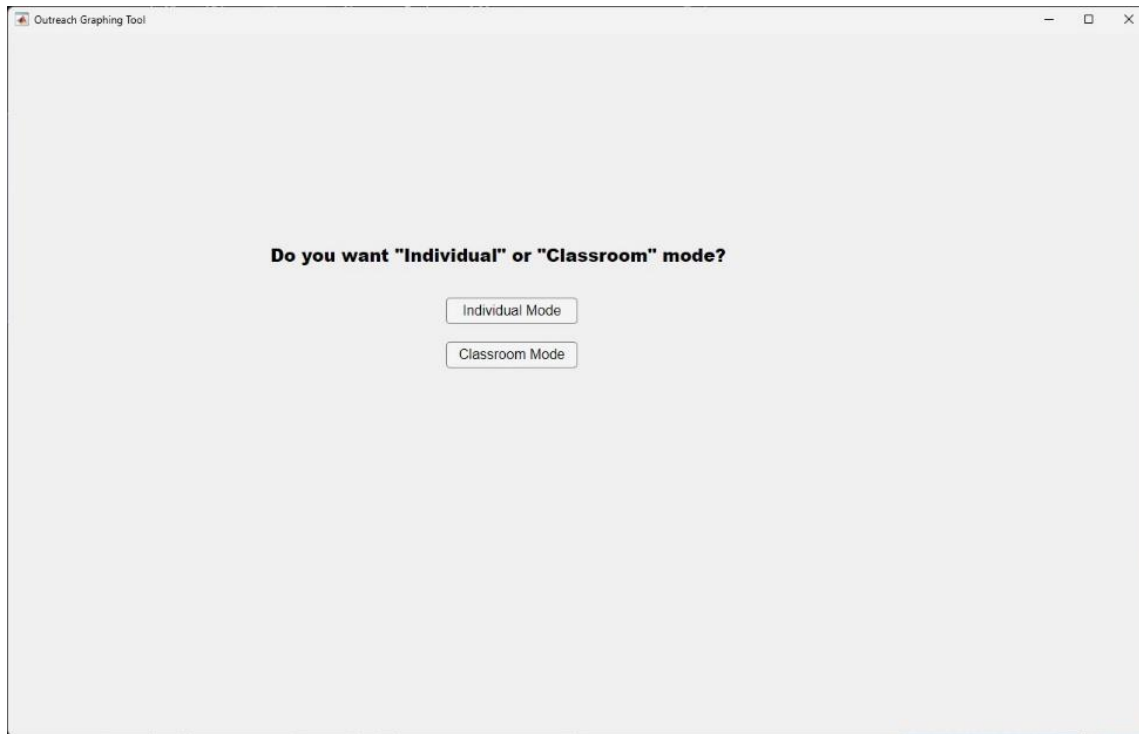
Fig. 14

Fig 15

Step 5

At this point you'll be looking at Figure 15. If at any point you've run into an issue, feel free to reference either the MATLAB official documentation about the MATLAB runtime environment at https://www.mathworks.com/products/compiler/matlab-runtime.html or email dgibbo03@nyit.edu for more help.

Use

Assuming you've run the installation correctly and are now looking at the Beginning screen asking about 'Individual' or 'Classroom' mode, you now have the Outreach Grip Strength Tool up and running. The differences between the two modes are detailed below.

Individual Mode –

Individual Mode is primarily used for single runtime instances or booth running scenarios where individuals may walk up and run the program themselves and see their own results compared to the data at large. After one person uses the program, it can be reset for the next person.

Classroom Mode –

Classroom Mode is primarily used for groups of individuals (typically a classroom) where a number of individuals input their data to be mapped against data at large as a group instead of an individual. After one group of individuals uses the program, it may be reset for another group of individuals (like another classroom of students) to use.

Use instructions for each are detailed below.

Individual Mode

Step 1

If you've selected 'Individual Mode' displayed in Figure 15 as above, you'll be greeted with the following display such as in Figure 16.

Before any information is input, you may select the four buttons at the bottom left for displaying different graphs with different types of base data graphed onto them, detailed below.

4a. – Vs Lemur

The default selected graph (Figure 16), and the first one you see, is a Box and Whisker Plot of different species of Lemur mapped against their grip force in percentage of body weight.
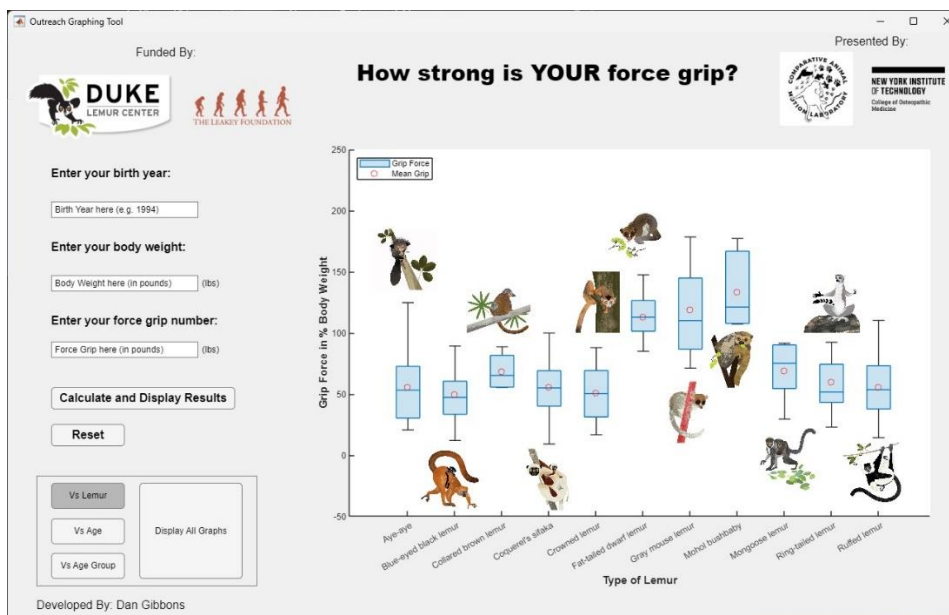
Fig. 16

4b. – Vs Age

The second graph you may select is a scatter plot (Figure 17) where humans at different ages (in years) are similarly mapped against grip force in percentage of their body weight.
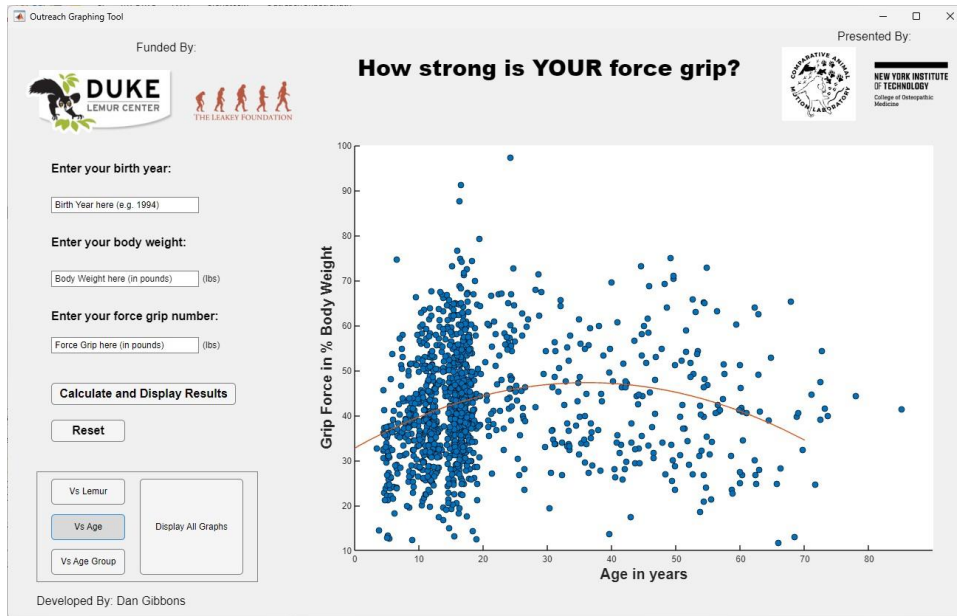
Fig. 17

4c. – Vs Age Group

The final graph you may select (Figure 18) is similar to the first graph. It is a Box and Whisker Plot of different age groups mapped against grip force in percentage body weight.
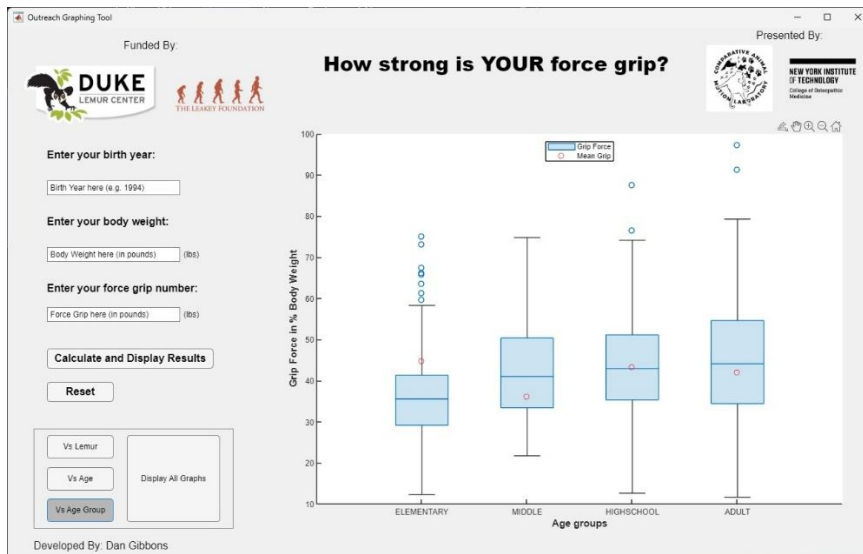

Fig. 18

4d. – Display All Graphs

The fourth button in the selection box allows you to view all three graphs at the same time for comparison (Figure 19).
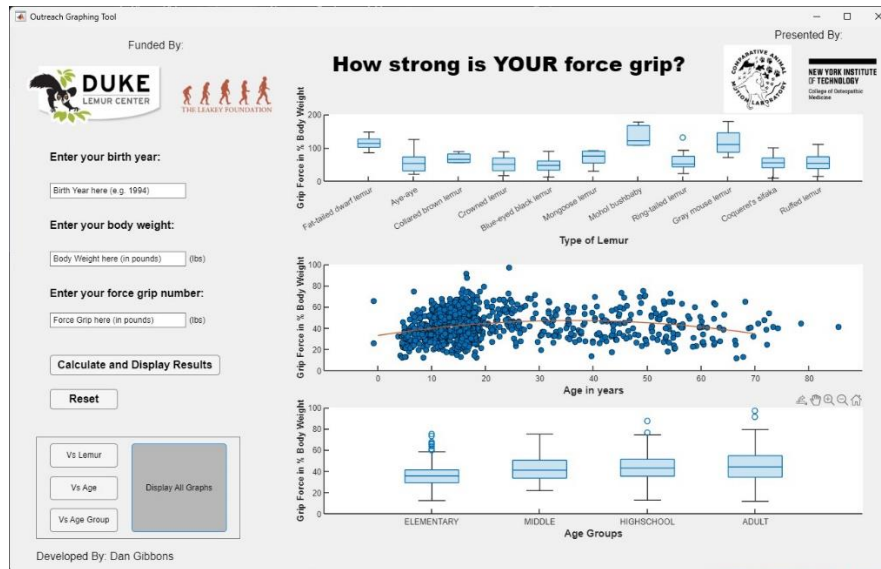

Fig. 19

Step 2

In the three inputs on the left, you'll have your user enter their information according to what is being asked

- Birth Year: 1994, 2005, 1948, etc.
- Body Weight in pounds: 150, 90, 300, etc.
- Force Grip Number in pounds: 55, 100, 120, etc.
  - o Force Grip will be determined by the supplied force grip measuring tool provided to the user before using the application.

After entering the proper information, the user may hit 'Calculate and Display Results'.

The graph display should revert back to the Lemur plot, but with a distinct difference. The user will now be plotted alongside the box and whisker plots as in Figure 20 as a red labeled dot.
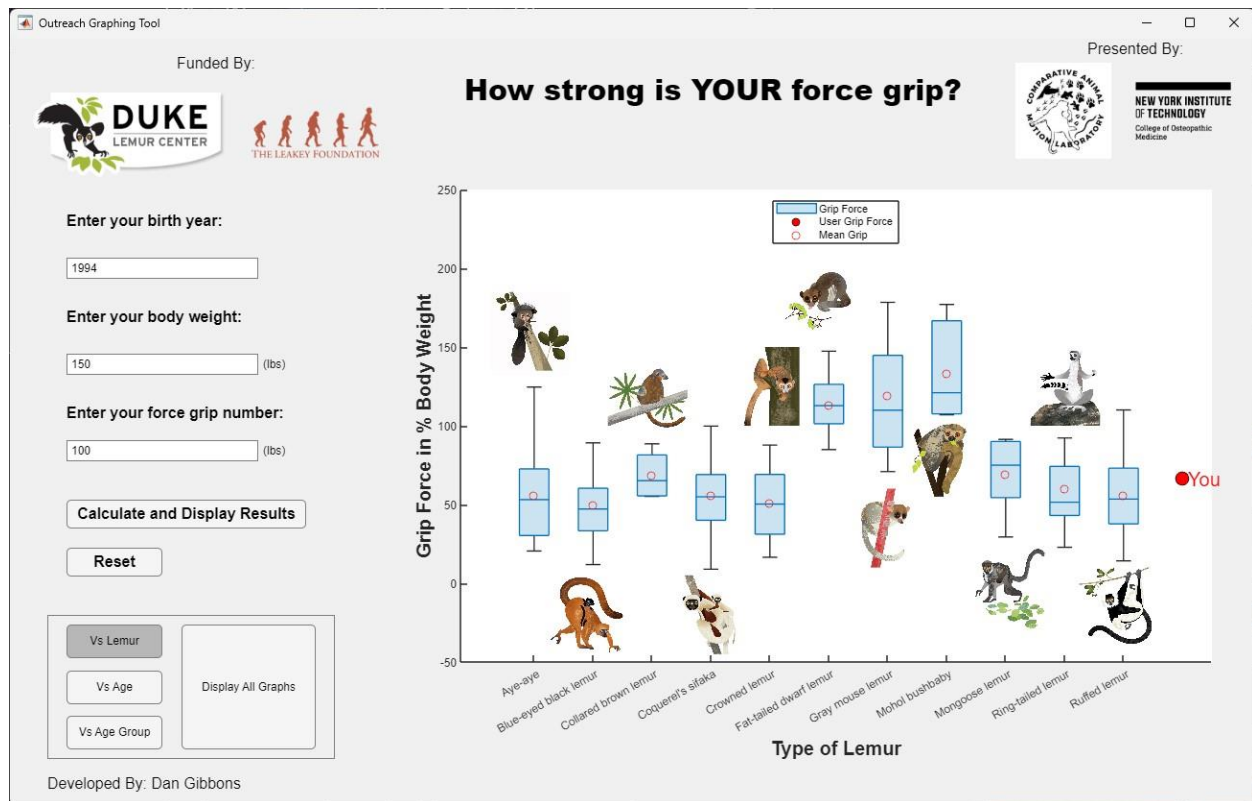
Fig. 20

Switching graphs using the buttons at the bottom left will result in graphs that look similar to Figures 21-23.
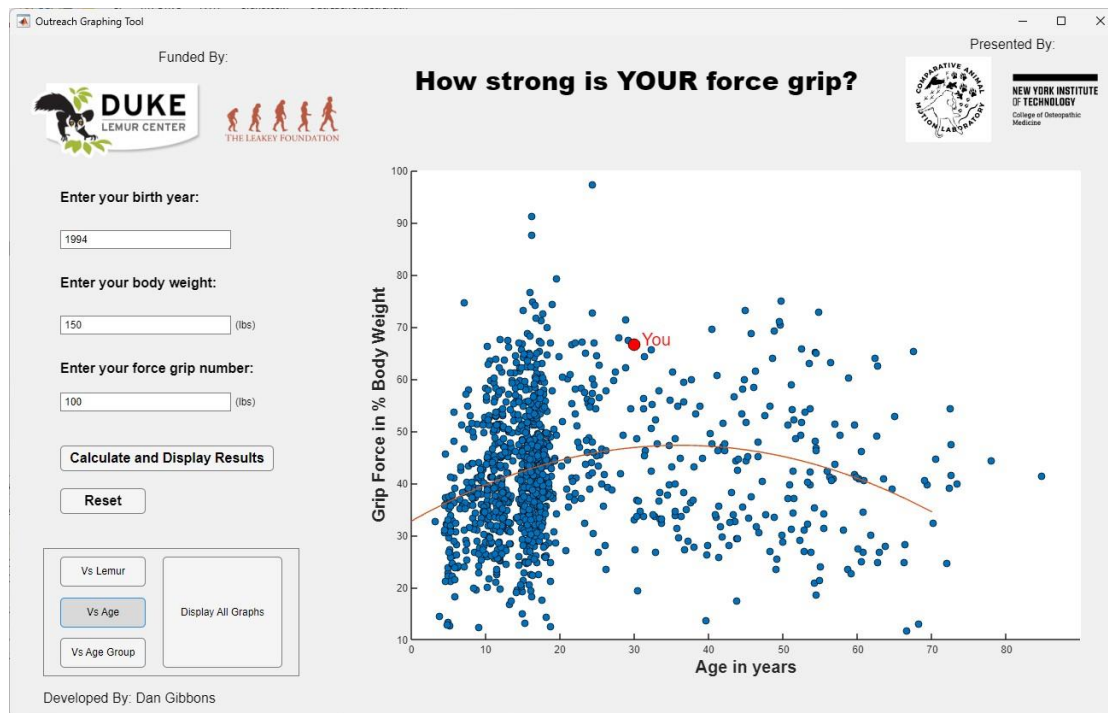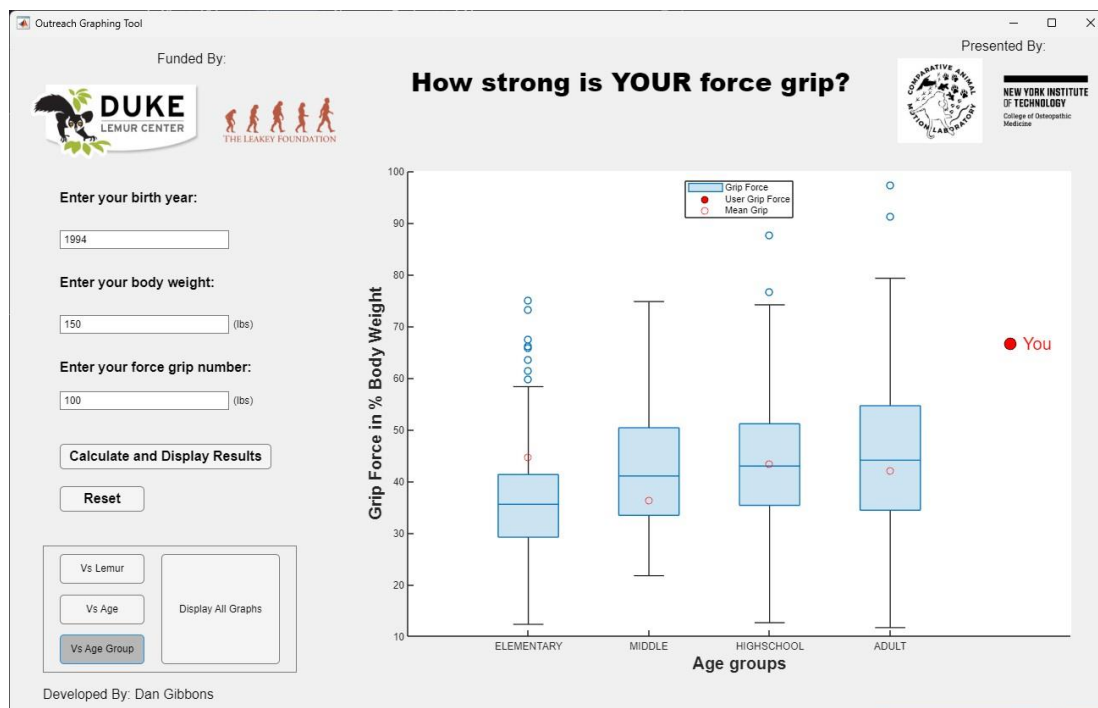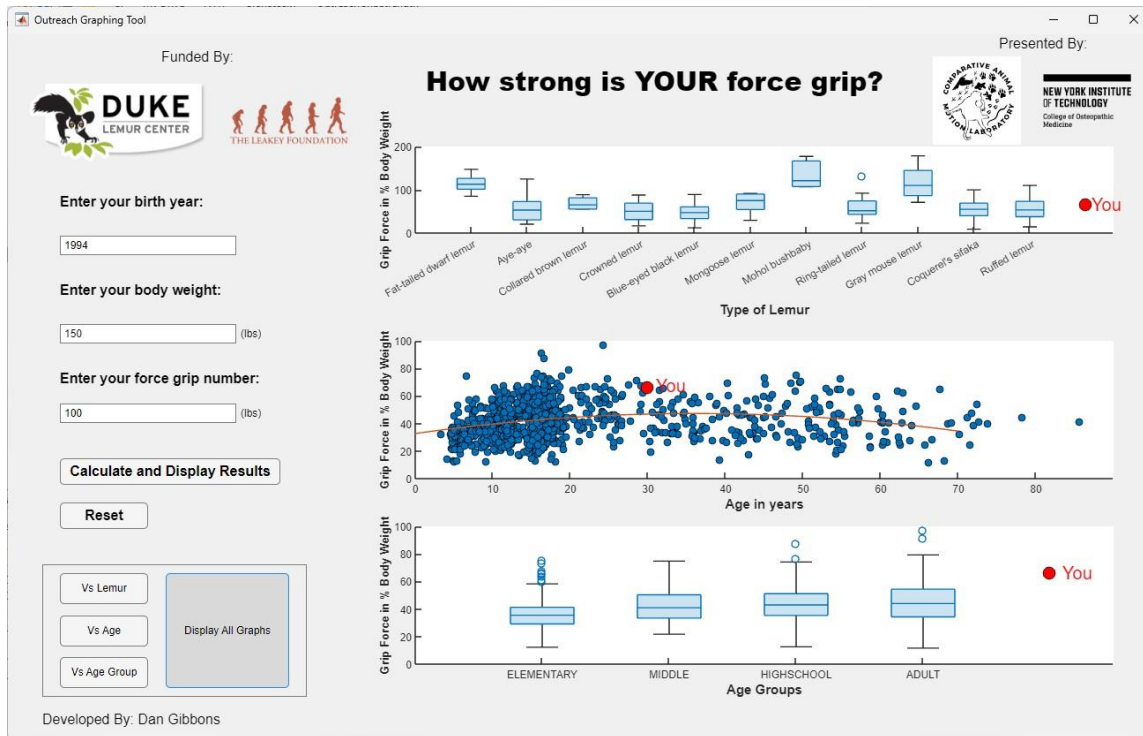
Fig. 21

Fig. 22

Fig. 23

Step 3

Before the next individual uses the program, the 'Reset' button should be clicked to clear the input fields and graphs of the previous user's data. The program may then be reused exactly like Steps 1-2 detail.

Classroom Mode

Step 1

If you've picked 'Classroom Mode' in Figure 15 above, you'll see a display similar to 'Individual Mode' as in Figure 16 with some slight differences (Figure 24)
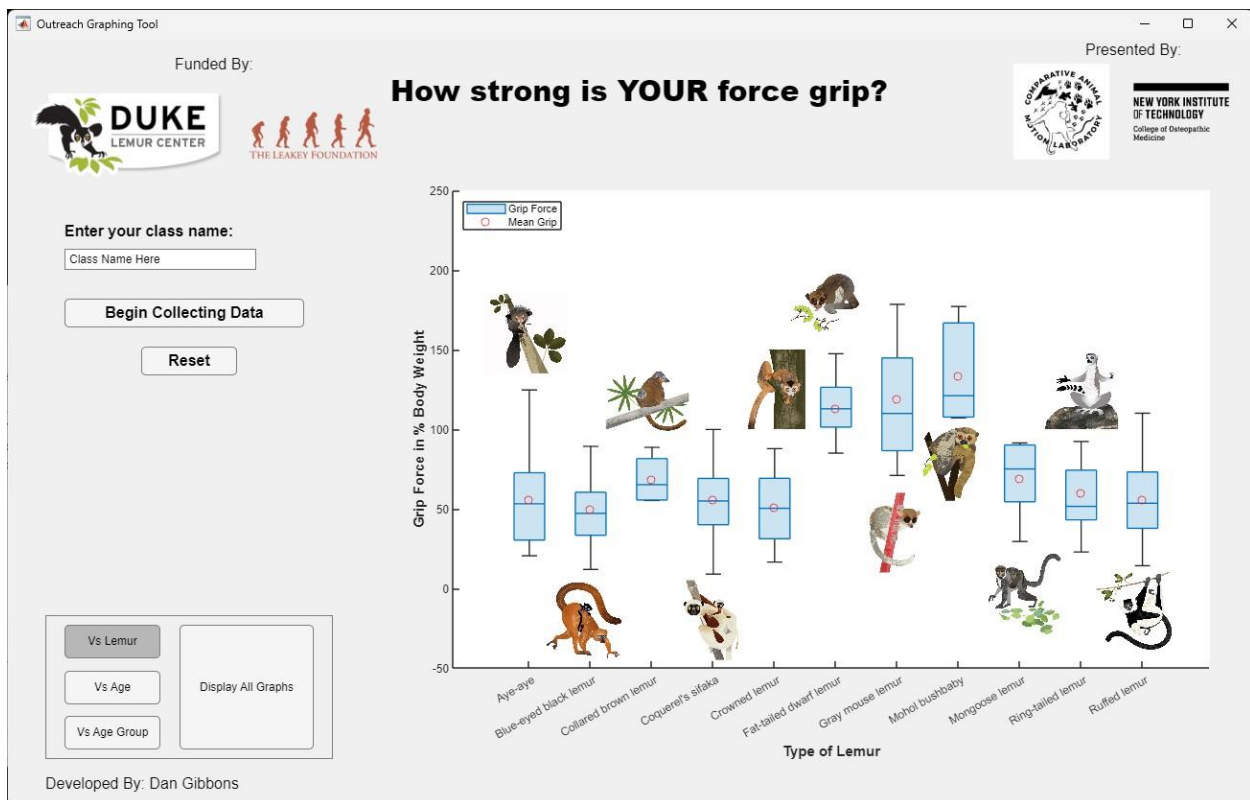
Fig. 24

An input field for class name will be displayed where the previous three inputs were located, along with a button that says 'Begin Collecting Data'.
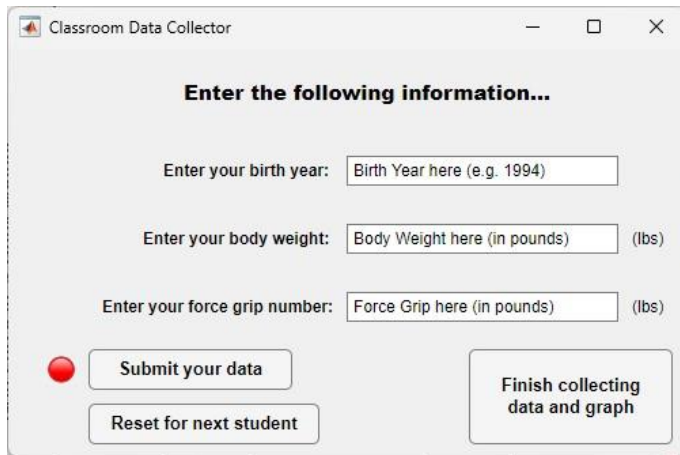
The bottom 4 graph display buttons will be the same as well as the 'Reset' button above them.

The buttons will display the same graphs as Figures 16-19 above.

To begin, enter the name of the class for graph display purposes (e.g. Ms. Strawberry's Class). Then click 'Begin Collecting Data'.

Step 2

After clicking 'Begin Collecting Data', the following window should pop up (Figure 25).

Fig. 25

Similar to Step 2 in the 'Individual Mode' instructions above, the user will enter the following data:

- Birth Year: 1994, 2005, 1948, etc.
- Body Weight in pounds: 150, 90, 300, etc.
- Force Grip Number in pounds: 55, 100, 120, etc.
  - Force Grip will be determined by the supplied force grip measuring tool provided to the user before using the application.

After all data fields have been filled in with the proper data, the 'Submit your data' button should be clicked. At this point, the indicator light to the left should turn green as in Figure 26.

Fig. 26

The 'Reset for next student' button should be clicked so the fields may be cleared for the next user to input.

Continue this process for every student or individual in your group or class.

Step 3

When data input is finished, the 'Finish collecting data and graph' button should be clicked. This will collate all the data previously input and display it on the graphs as below in Figures 27-30
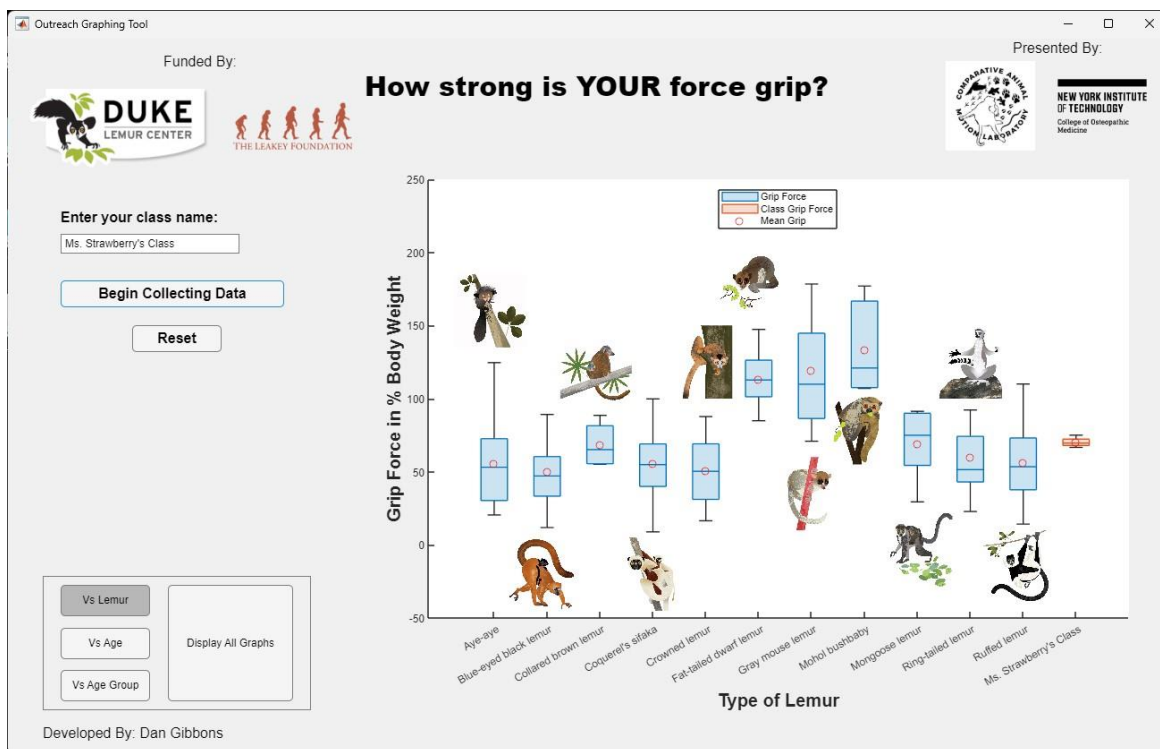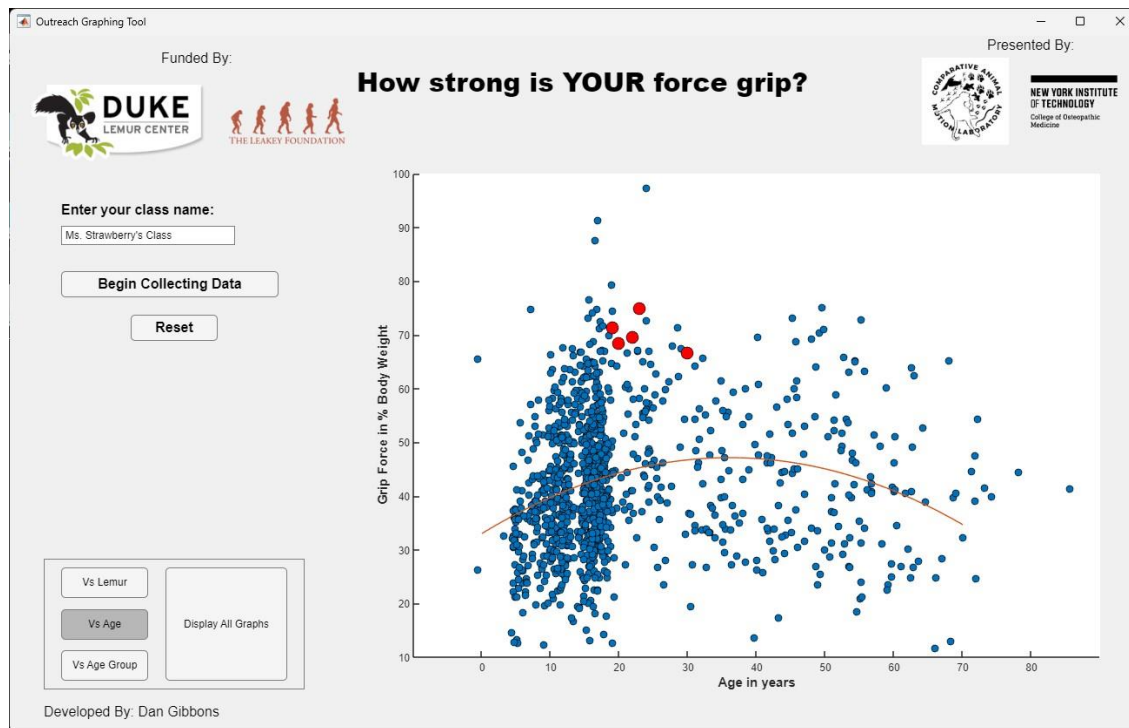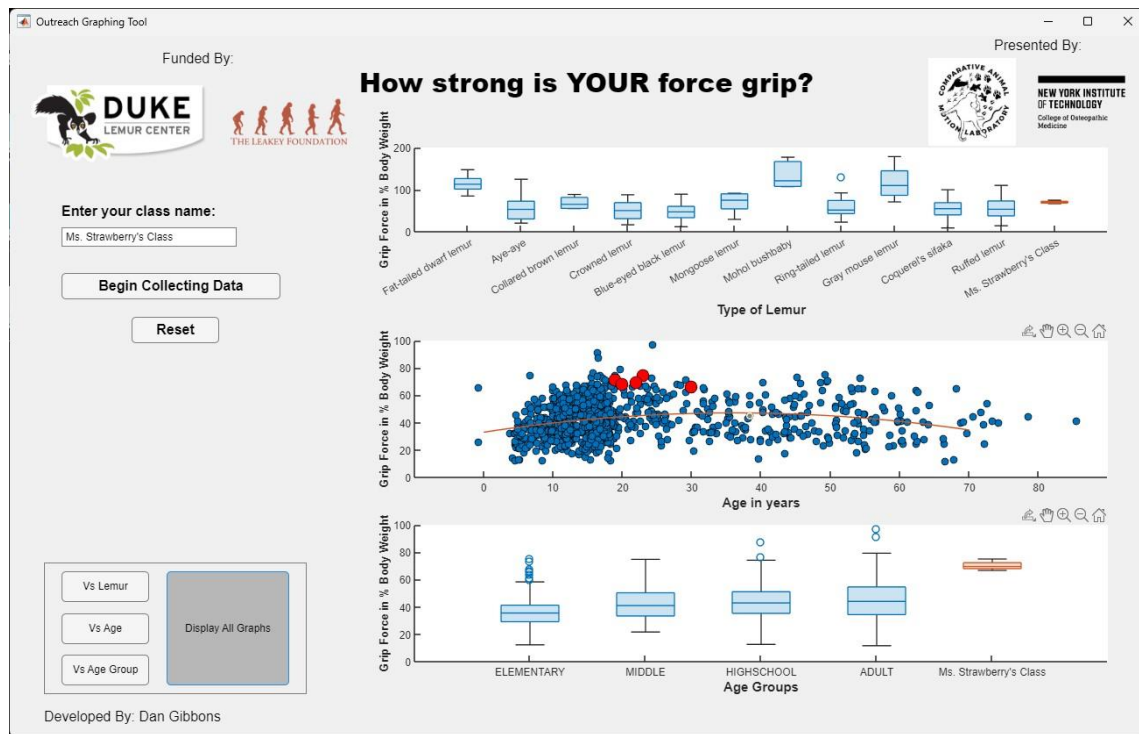

Fig. 27

Fig. 28

Fig. 29

Fig. 30

Step 4

Before the next group or class uses the program, the 'Reset' button should be clicked to clear the input fields and graphs of the previous users' data. The program may then be reused exactly like Steps 1-3 detail.