Eye-Tracker User Manual

Kaden Kornaus

CSCI460

2025

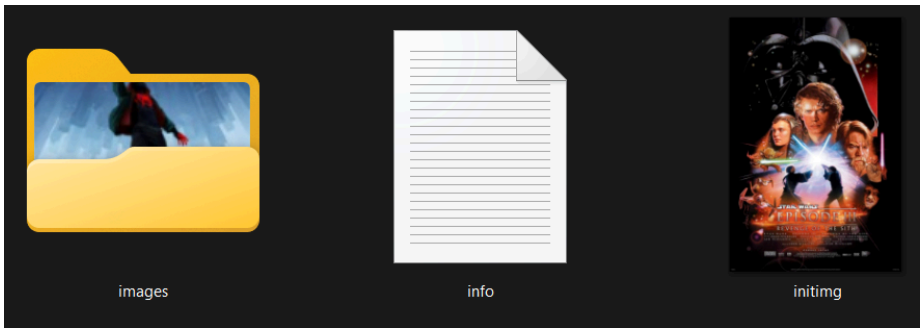
Table of Contents

Creating a Test Folder

Here are some steps to help you build a test folder that the program can accept. There are only three different things that you will need to include inside of the test folder.

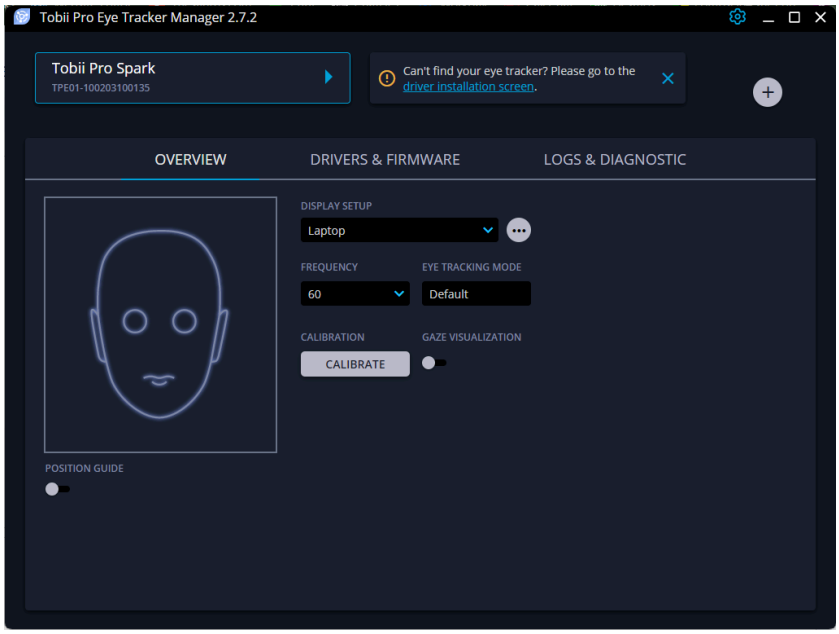
1. **info.txt**
    - This is a simple text file that will contain a string of 1's and 0's to represent the answer key to your test. That is, whether or not a given image matches the initImg.
    - 1 = Match
    - 0 = No match
    - Example string: 01000101. This string means that the first image does not match the initImg, the second image DOES match the initImg, the third image does not, and so on…
    - There is no character to represent the initImg, since the user is asked to memorize it, rather than make a decision. This means that you should have the same number of characters in your answer key as you have images in your "images" folder.
    - These values don't actually have any effect on the program itself, but that could be a future addition.
2. **initImg.jpg**
    - This is going to be the first image that shows up when the user is taking the test.
    - IT DOES NOT HAVE TO BE A JPG, JUST SOME SORT OF IMAGE FILE
3. **images folder**
    - This is going to be a folder the holds every subsequent image the you want to be displayed during the test
    - The images are displayed in the order in which they appear in this folder, so that would be something to think about if you want a specific ordering for your images.
    - You can have as many images as you want in this folder.
    - There should ONLY be images in this folder

After you have completed all of these steps, your folder should look something like this:

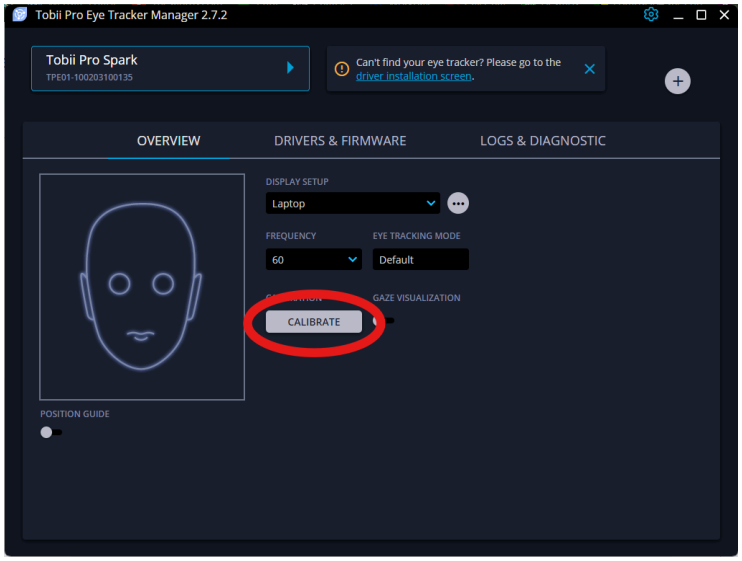


Calibrating the Eye-Tracker

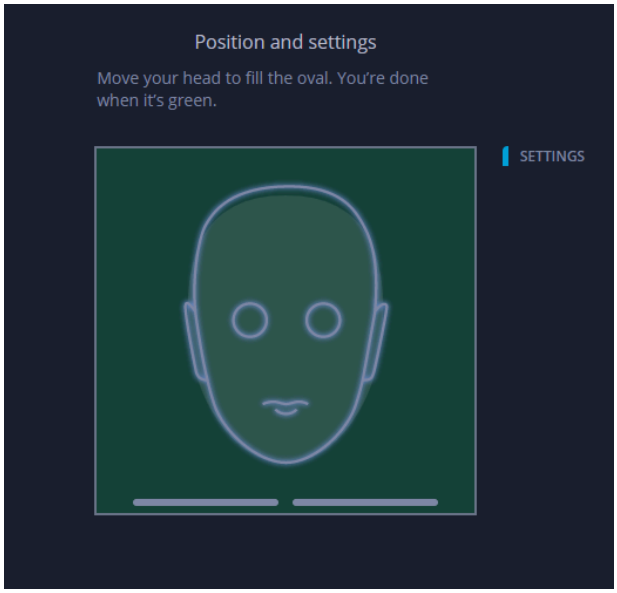
For this step, you will need to use the Tobii software called the Tobii Pro Eye Tracker Manager. If you do not already have this installed, you can follow the link to Tobii's installation page. Once you launch the software, you should be prompted to connect the eye-tracker. After being connected, you should be presented with a scree like this:



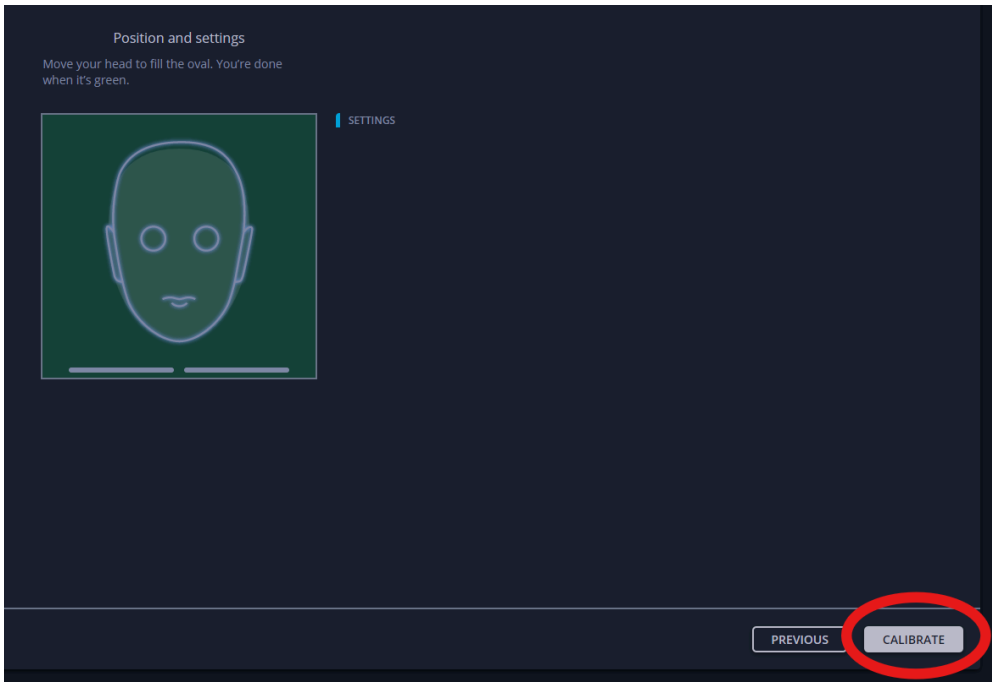
From here, you may want to configure a "Display Setup" that works for you. If you do, you will just need to follow the steps the software provides you. Otherwise, the next step is to click the "Calibrate" button.



You will then see a screen with a face, and an outline on it. The goal is to get your head into a position where the face lines up as best it can with the outline. If done properly, your screen should look something like this:

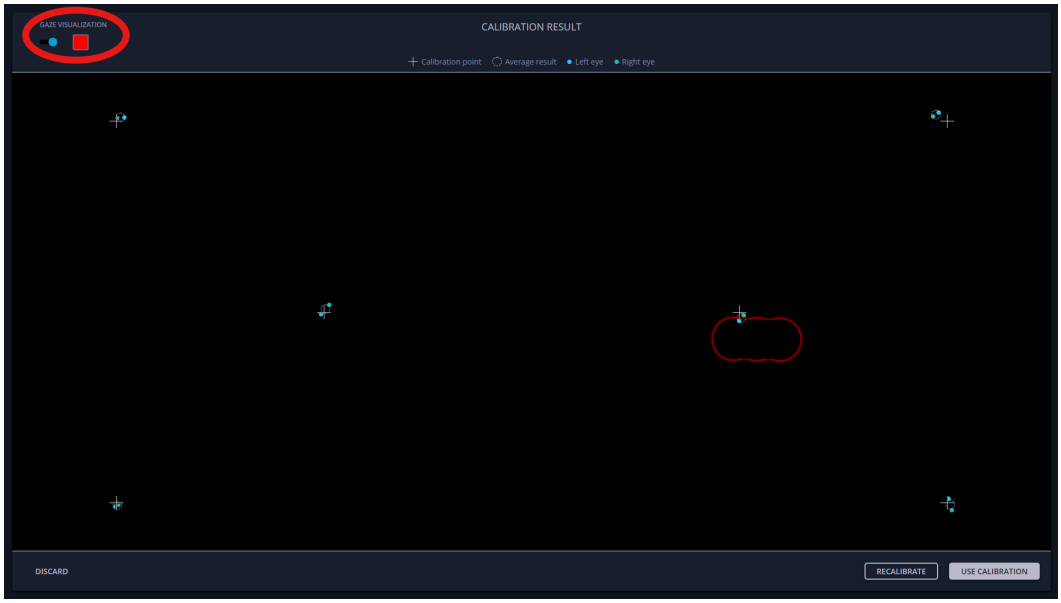


Once your head is in a desirable position, you are going to hit the “Calibrate” button to confirm your head positioning:



After hitting this button, you will be taken to a screen where you are tasked to look at white dots on the screen until they explode.

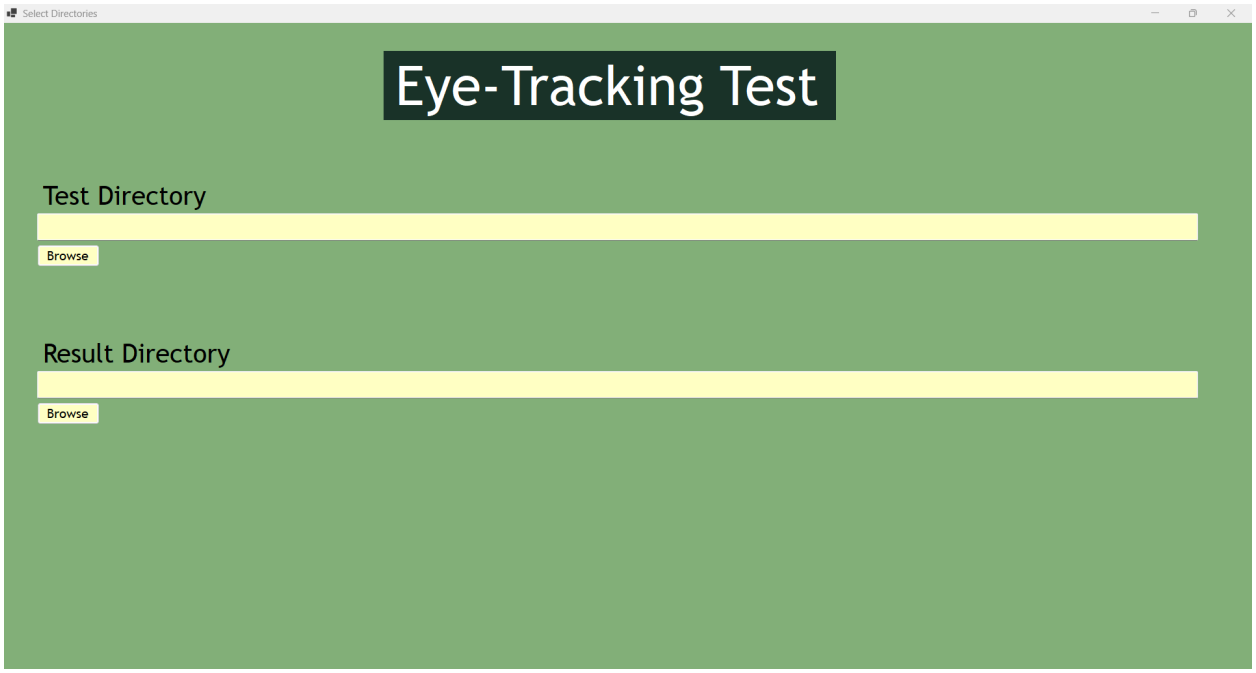
After this is completed, you should come to a black screen with points on it. If you turn on the “Gaze Visualization” switch, you should be able to see a blob that will follow around wherever your eyes are moving:



Finally, you can confirm your calibration by simply clicking on the “Use Calibration” button in the bottom right corner.

Getting Started With the Test

The first thing you will need to do is launch the test form. Upon opening the form, you will be greeted with a screen like this:

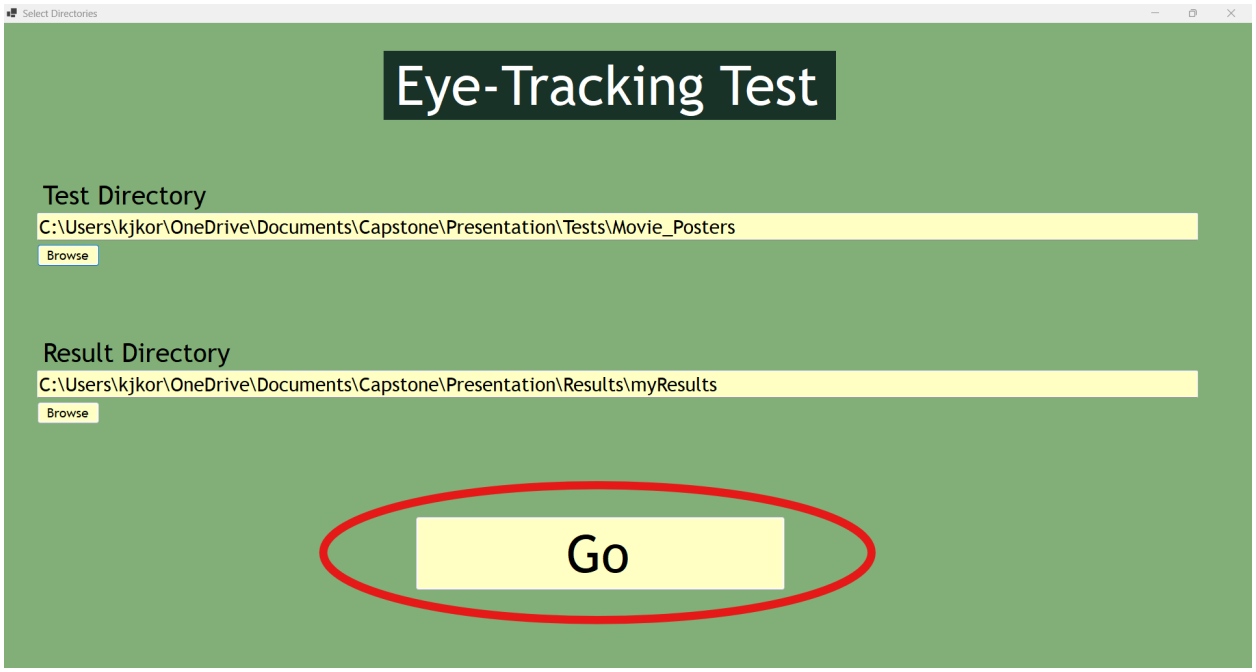


You will need to enter two folder paths, the first path is for the directory holding all of your images(aka the “test” directory). The process to set up one of these folders was discussed in a previous section of this guide.

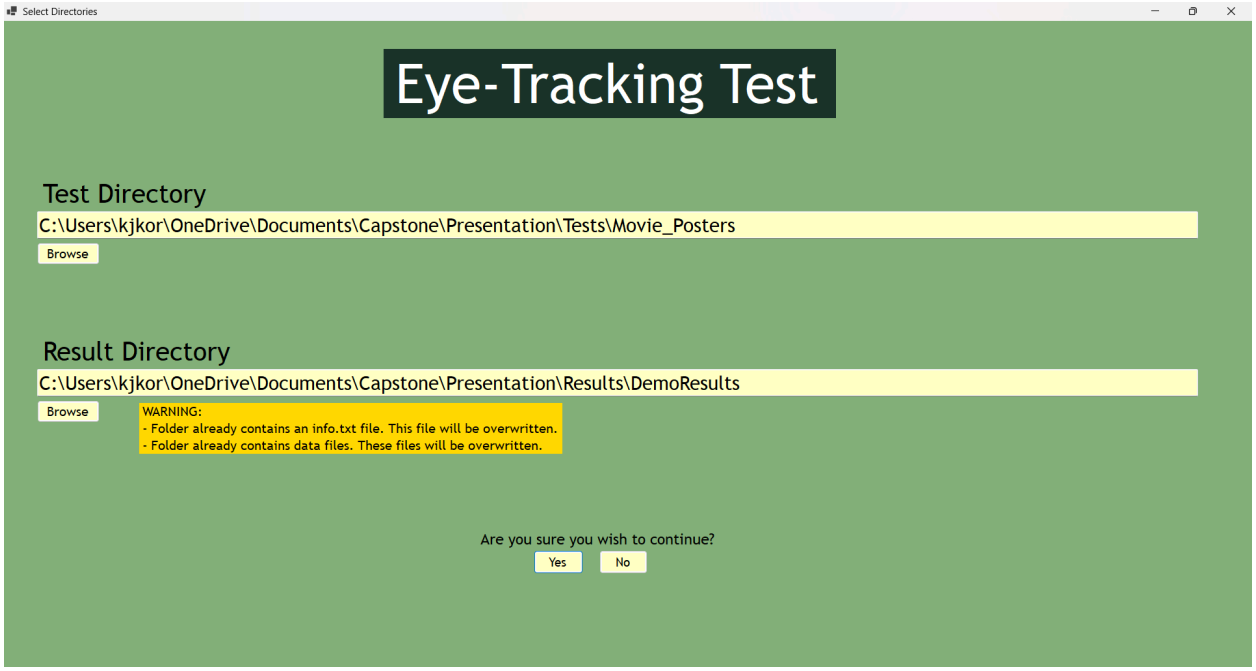
The second folder path is to the “result” directory. This is simply the folder where you want the results of the test to be stored. You would probably want your “result” directory to just be an empty folder, but it will still work if the folder is not empty.

If you do not know the exact path, or do not feel like typing it all in, you may click on the “Browse” buttons in order to navigate through your files to select the folders you want.

After doing this, you should be able to now press the “Go” button:



*** If you select a results folder that already contains certain files, you may be warned that these files will be overwritten:

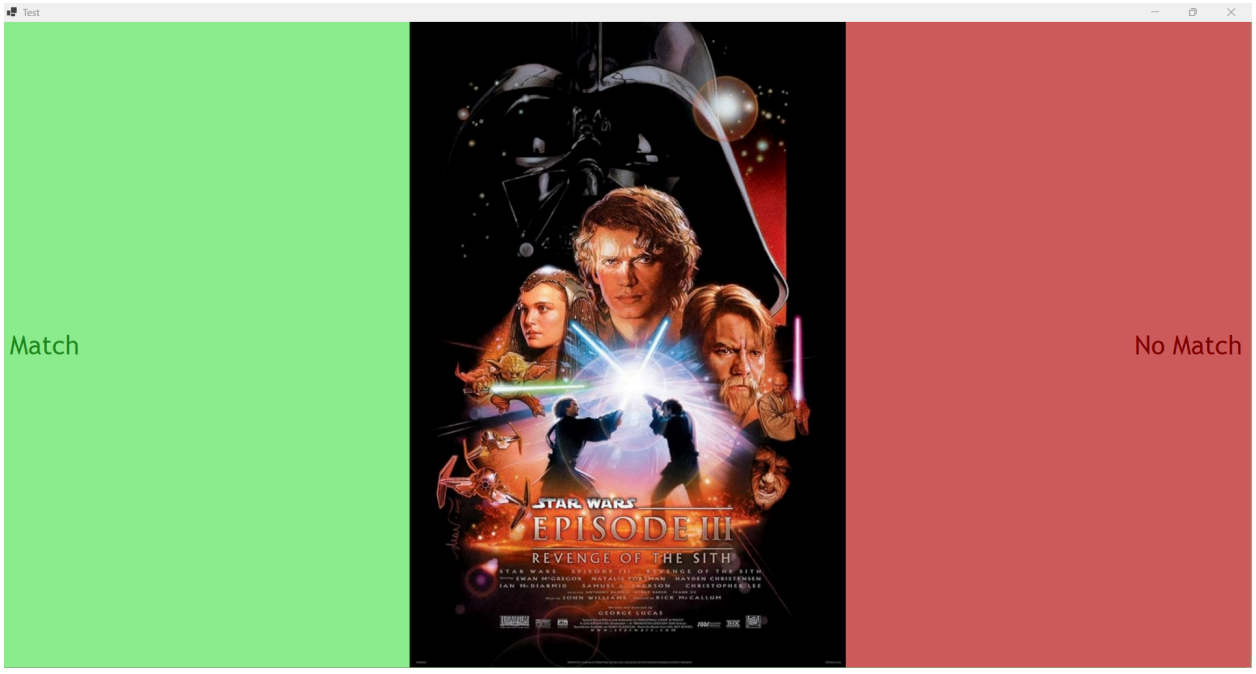


After clicking “Go”, you should see a screen that looks something like this. The name of your test folder should be displayed, and you should see a “Start Test” button along with a “View Test Instructions” button:

If you do not see this screen, and instead get a screen that looks like this:

It just means that the program did not find your eye-tracker right away. First, make sure that your eye-tracker is plugged into your computer. Next, by hitting the “Refresh” button, the program should find your eye-tracker, and allow you to proceed to the test.

To begin the test, all you need to do is click the “Start Test” button. This will begin tracking your eyes, thus beginning the testing process. During the test, you will see screens that look like this:



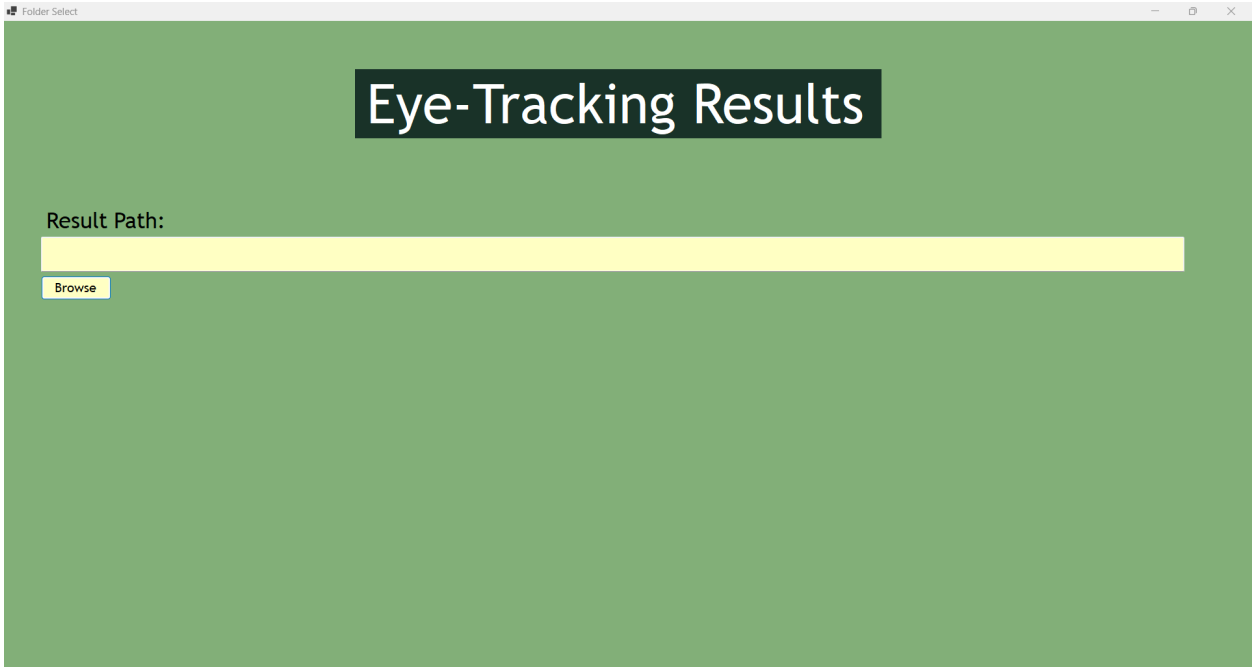
You will use the spacebar to proceed past the first image, then use the ‘A’ or ‘L’ key to proceed past any subsequent images. By pressing the ‘A’ key, you are answering that the current image

“matches” the original image. By pressing the ‘L’ key, you are answering that the current image “does not match” the original image. Once again, these answers do not change anything about the program itself, except for a few values stored in the results folder, but they could be implemented in the future.

After the test is done, you are then able to navigate to the “View Results” program.

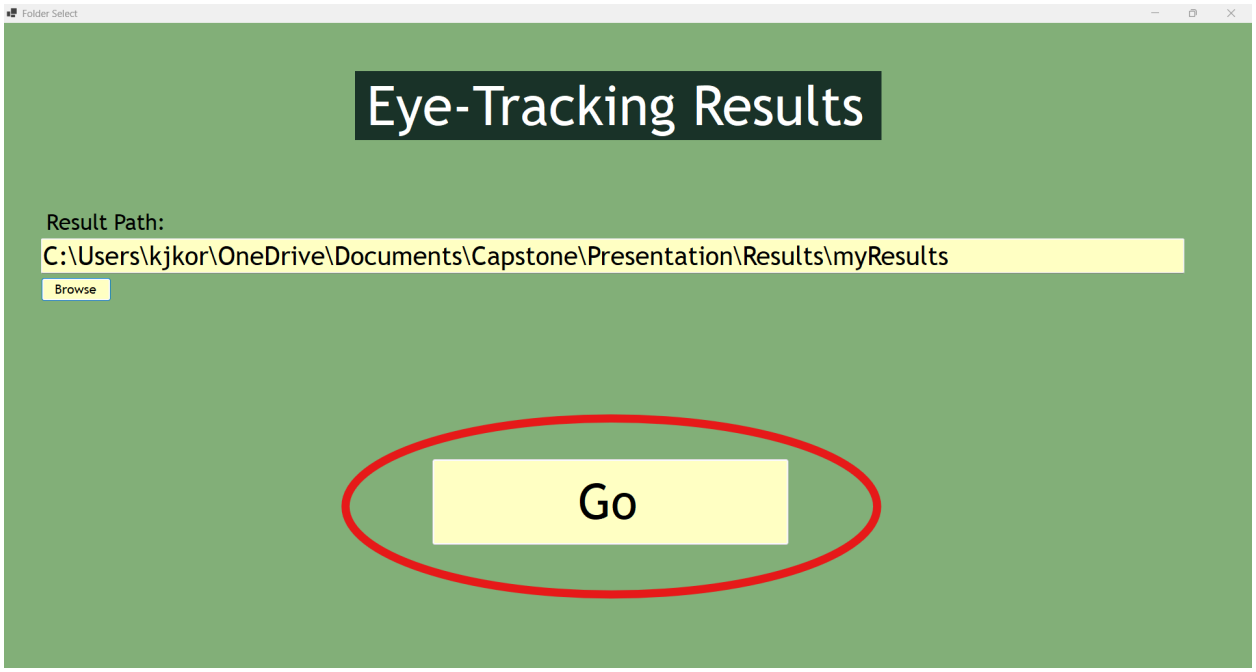
Viewing the Results of a Test

Similar to the test program, you will be greeted with a screen that prompts you to enter a folder path to a “results” directory that was chosen when a subject took the test. The screen looks very similar to the test screen:

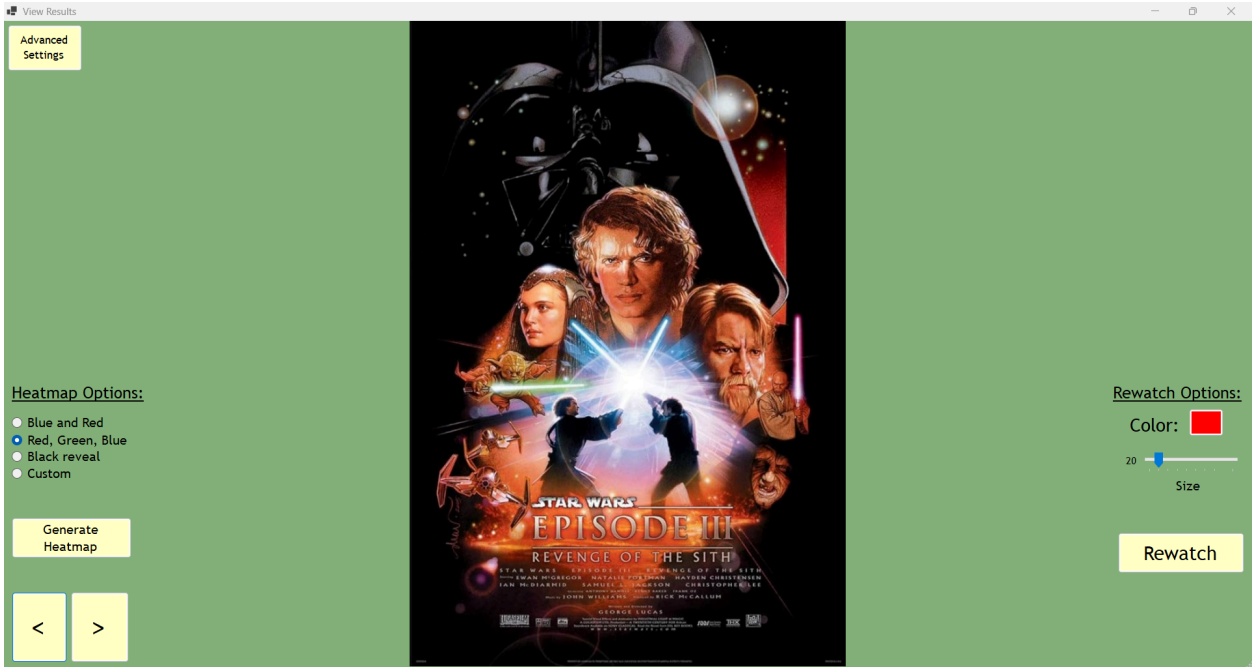


Once again, if you do not want to type out the entire path, or do not know the path, you may click the “Browse” button in order to look through your files for the folder you need.

Once you’ve found the folder you want, you may click the “Go” button:

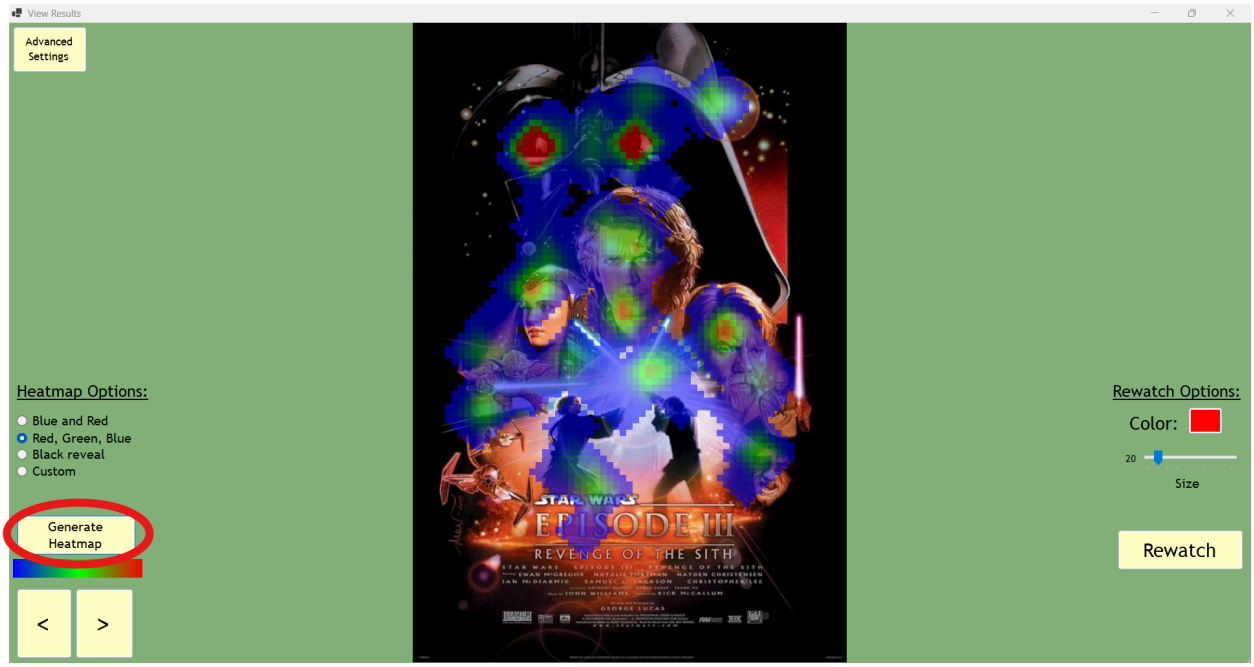


After clicking the “Go” button, you should see the first image of the test presented to you, along with a wide array of buttons and sliders. It should look something like this:



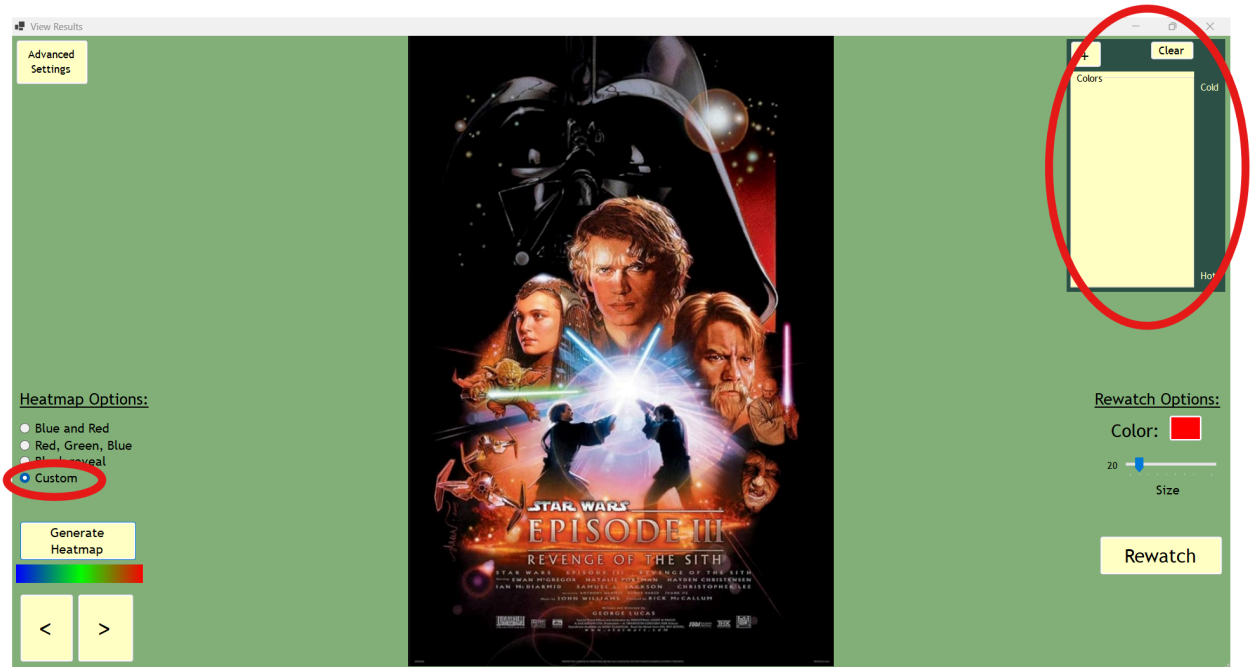
Generating a Heatmap

By clicking the “Generate heatmap” button, the program will create a heatmap overlay on the image depicting where the user most frequently looked at the image. It should look something like this:

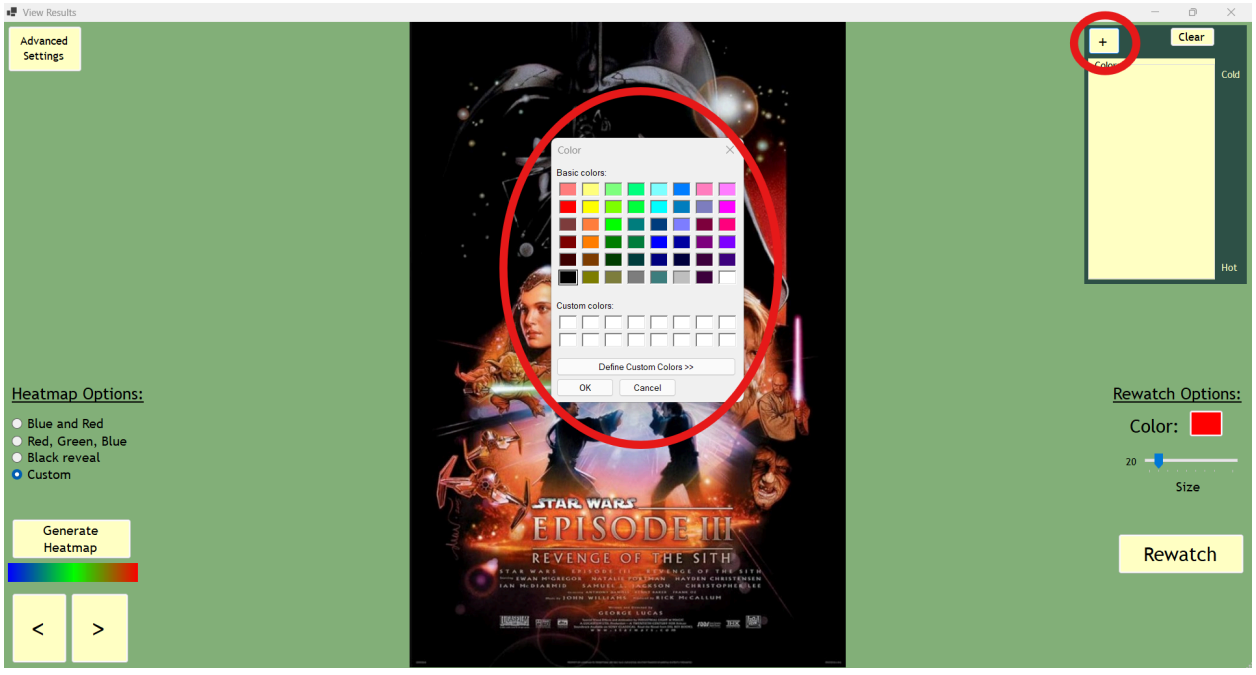


You can also change the color of the heatmap using the radio buttons directly above the button.

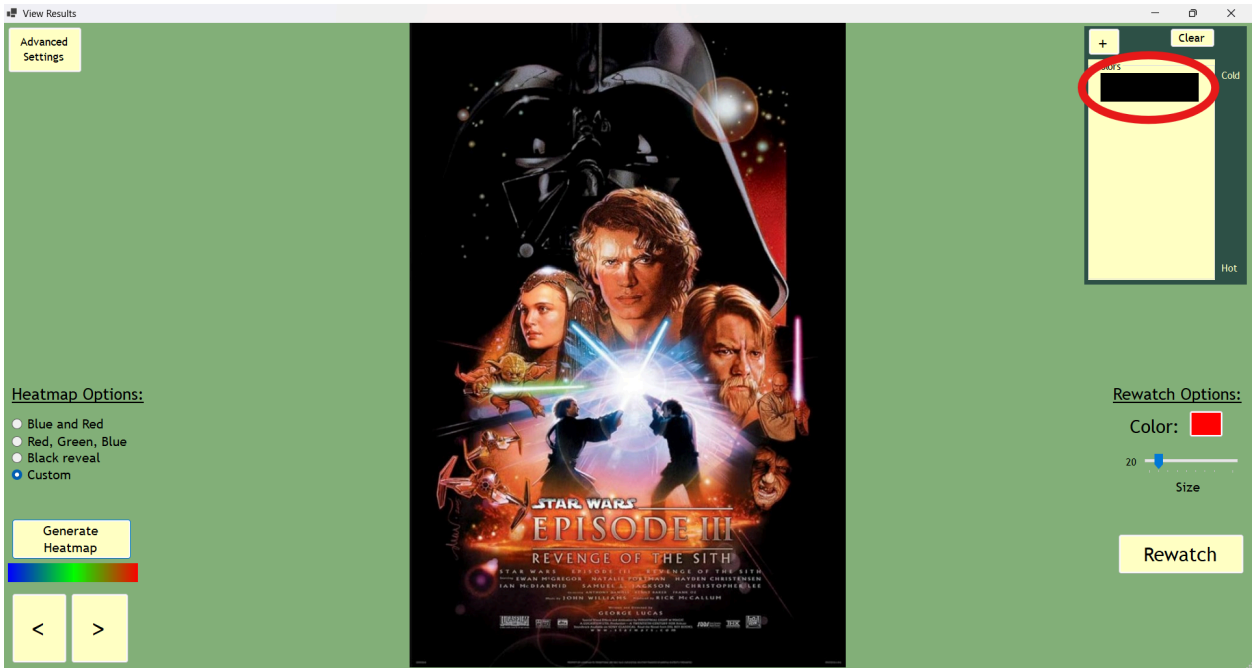
The most interesting of these color changes though, is the “Custom” option. By clicking this option, a menu will appear, which allows you to select your own colors for the heatmap to use:



By clicking the "+" button, a menu will appear, allowing you to pick a color to add.



Once you have selected a color, it will be added into the list.

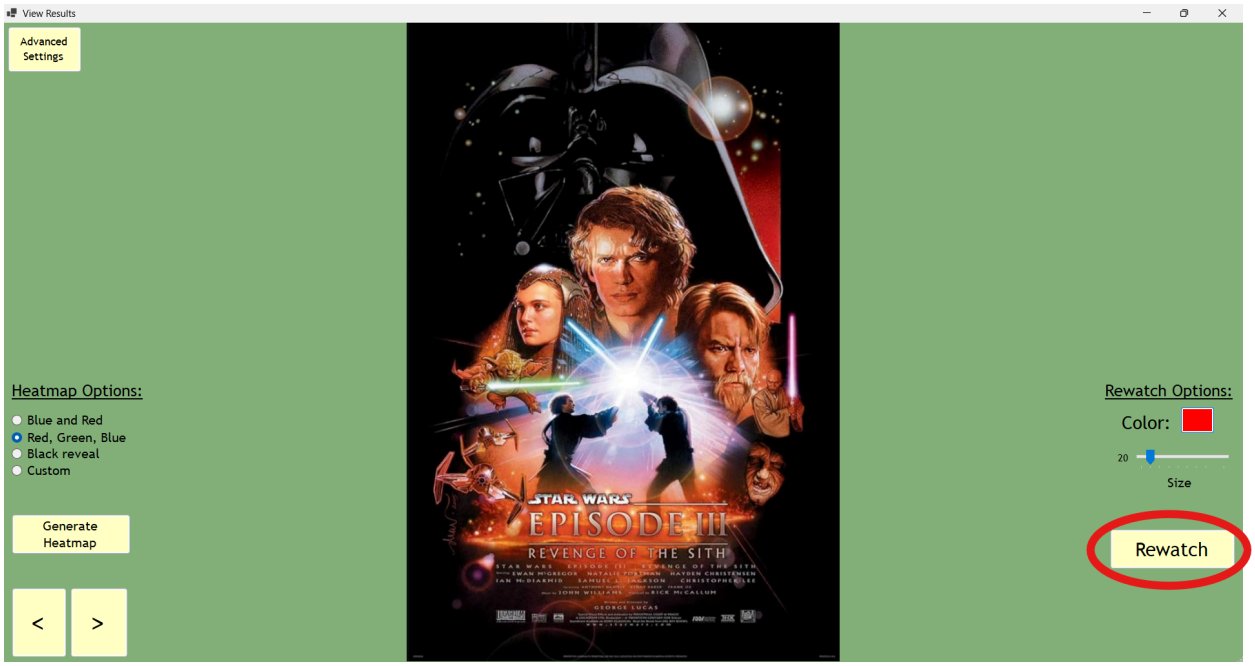


Once you have selected at least two colors, you can click the “Generate Heatmap” button, and it will create a heatmap based on the colors you selected.

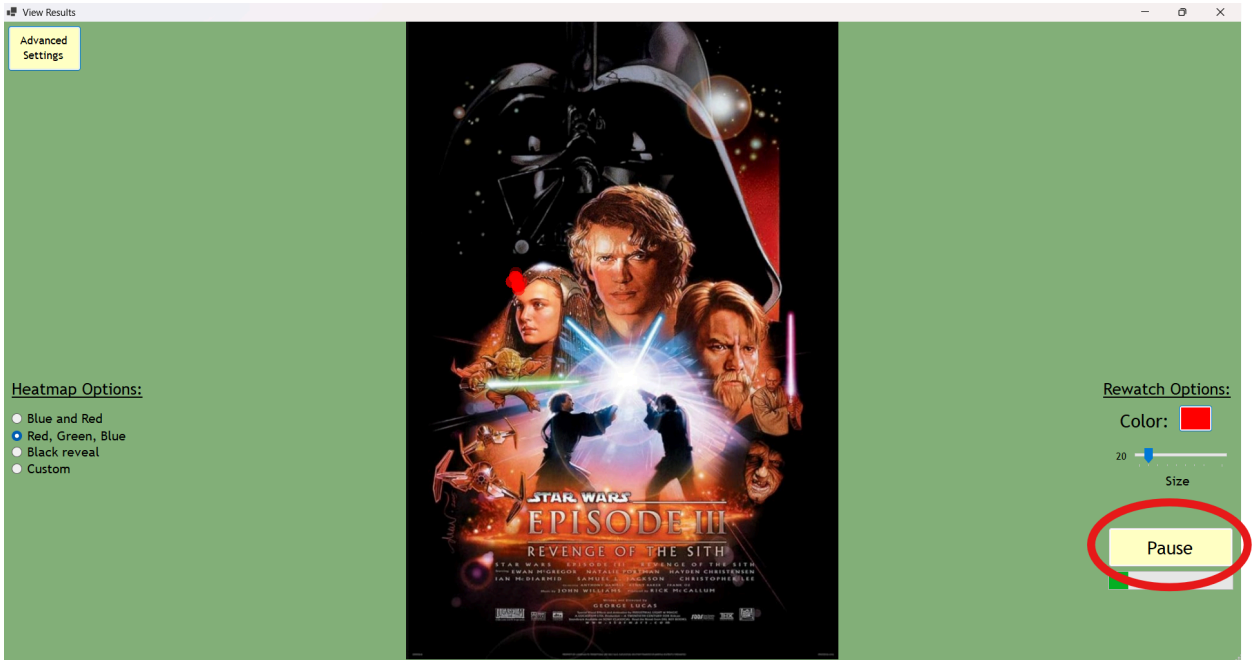
If you wish to shift the order of the colors, or delete a color from the list, all you have to do is click on the color you wish to remove/shift, then use the arrow keys to shift its spot in the list, or use backspace to remove it from the list entirely.

Rewatch Animation

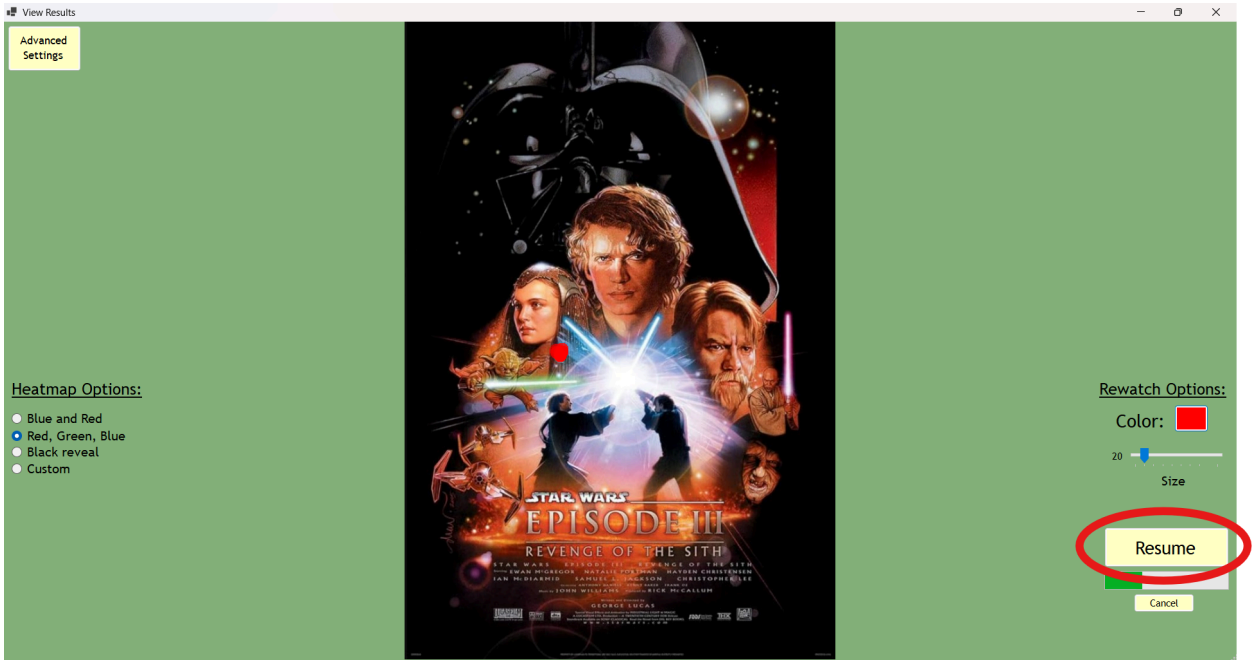
By clicking the “Rewatch” button, you will start an animation that shows where the user’s eyes traveled across the image chronologically. A dot will appear on the screen, indicating where the user was looking, and it will dart across the screen along the path of their eyes:



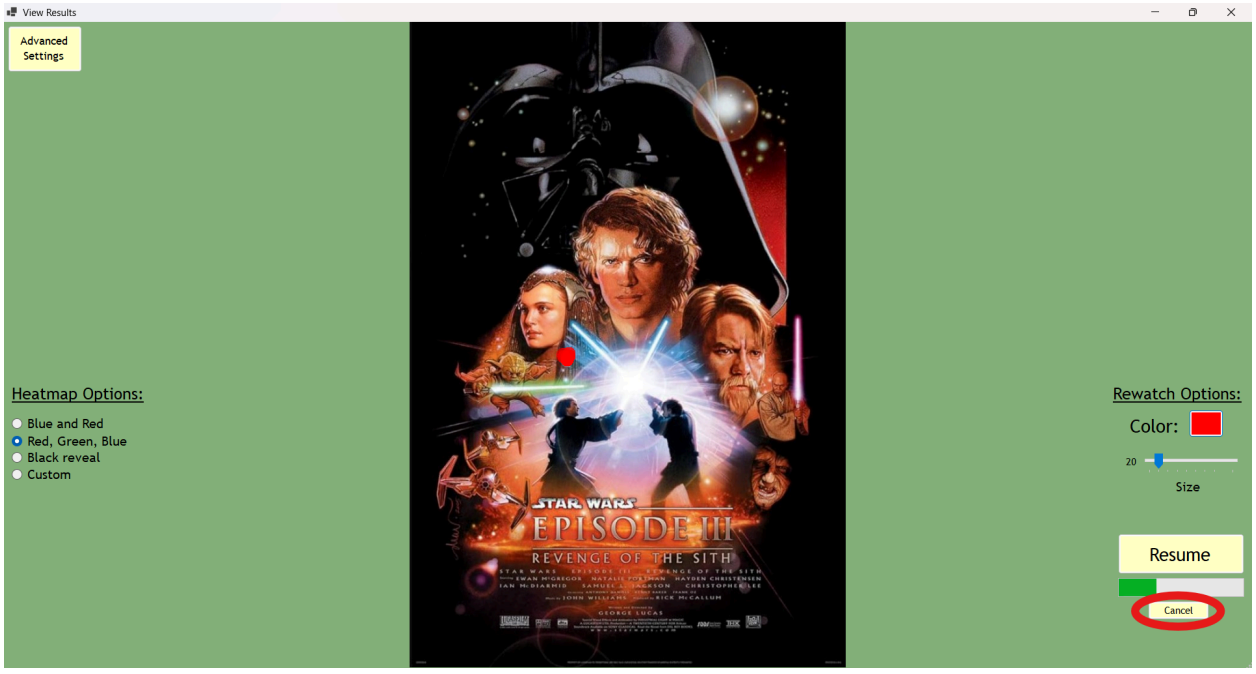
While the animation is running, you may pause it by clicking on the “Pause” button that will appear in place of the “Rewatch” button.



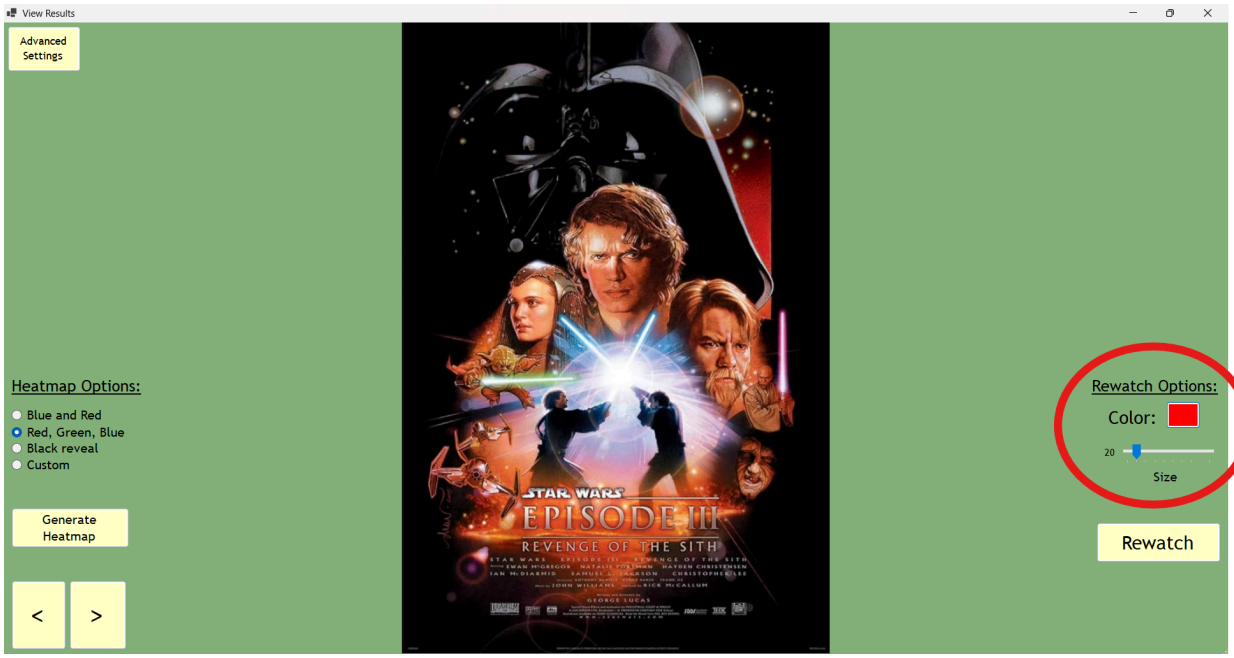
Once paused, you may also resume the animation by clicking on the “Resume” button that will appear in place of the “Pause” button.



Finally, you can cancel the animation by clicking on the “Cancel” button that will appear next to the “Resume” button.

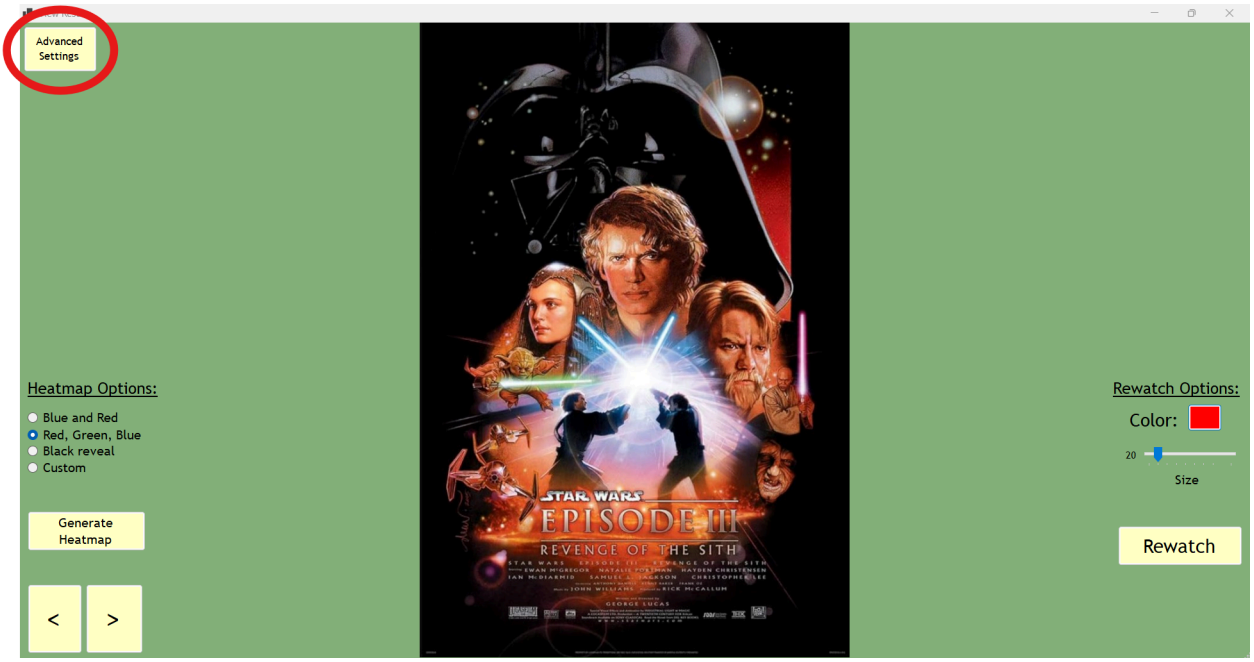


Additionally, you can change the size and color of the dot by clicking on the color, and by shifting the size bar.

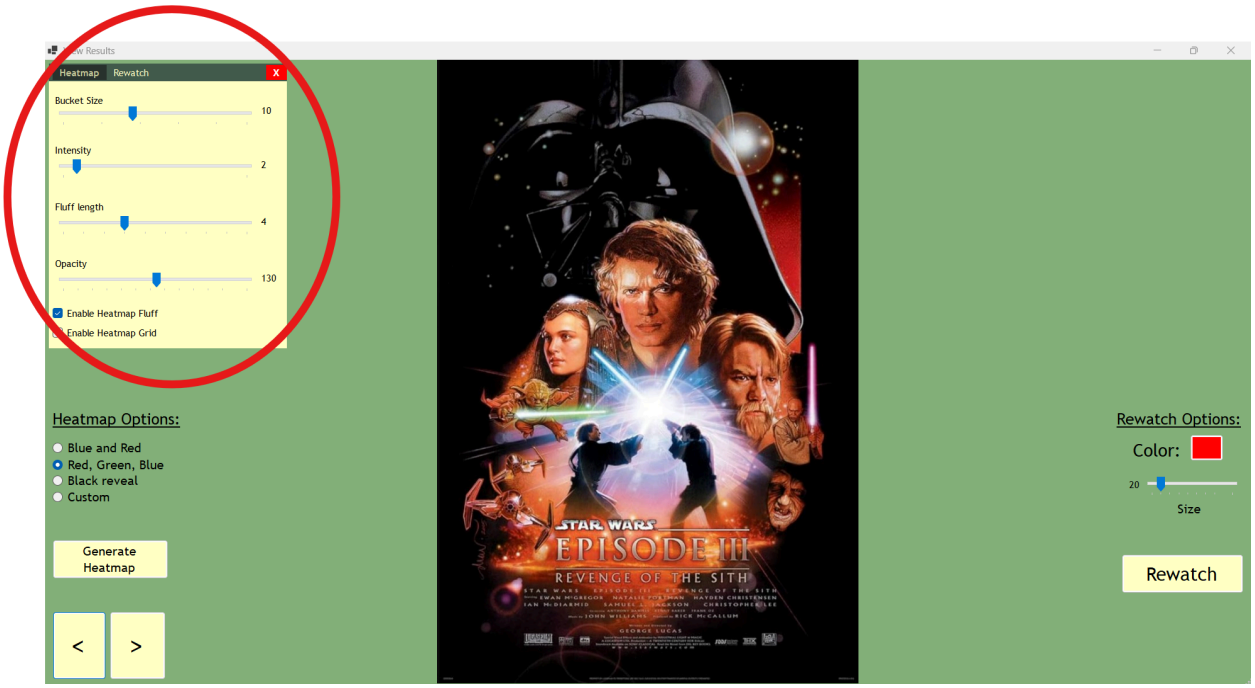


Advanced Settings

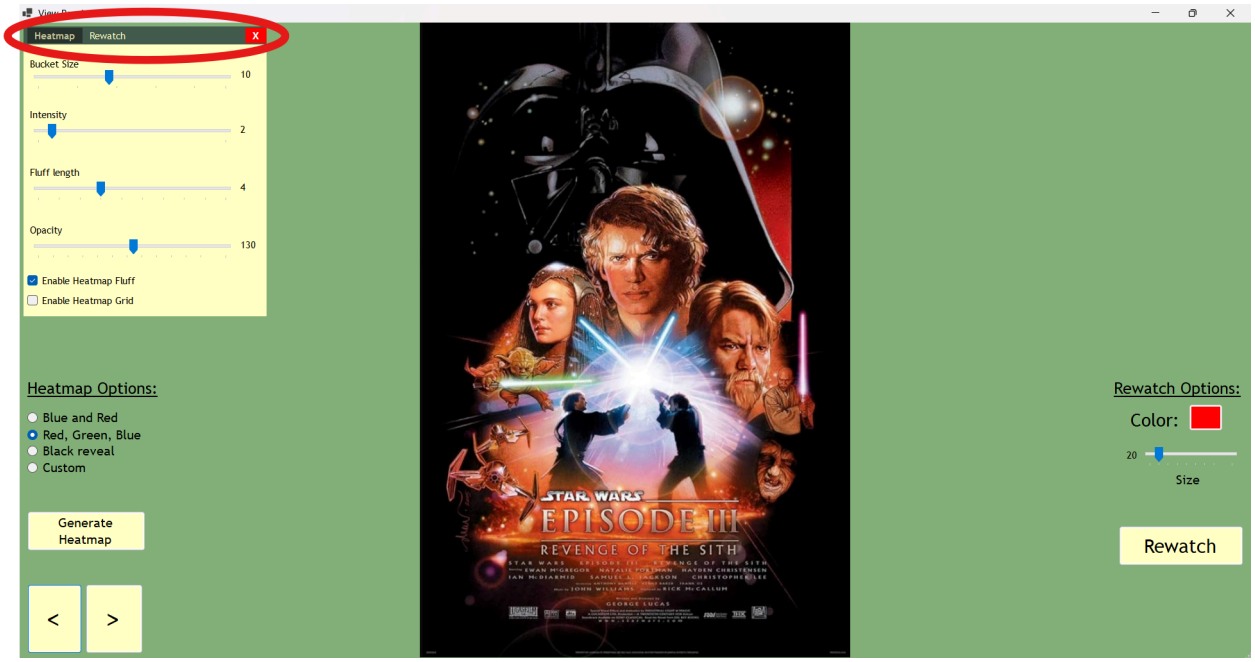
Both the heatmap and rewatch feature had more intricate settings that the user can change, but were not important enough to clutter up the main page. To access these settings, you can click on the “Advanced Settings” button.



Upon clicking this button, a menu will appear containing all of the settings the user is allowed to change.



Using the tabs at the top of the menu, the user can switch between seeing the heatmap advanced settings, and the rewatch advanced settings.



Finally, to close the advanced settings menu, you just need to click the red “x” in the top right corner of the menu.