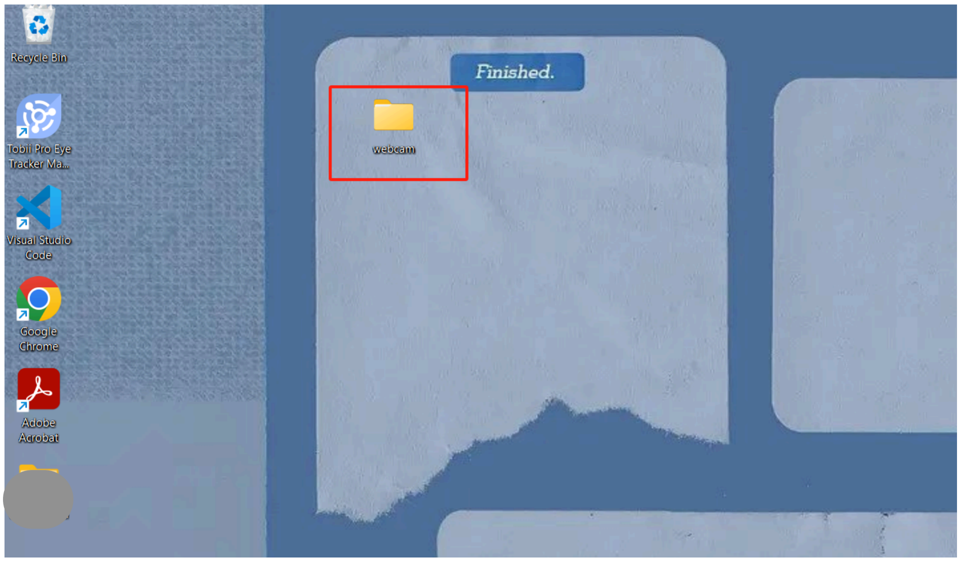
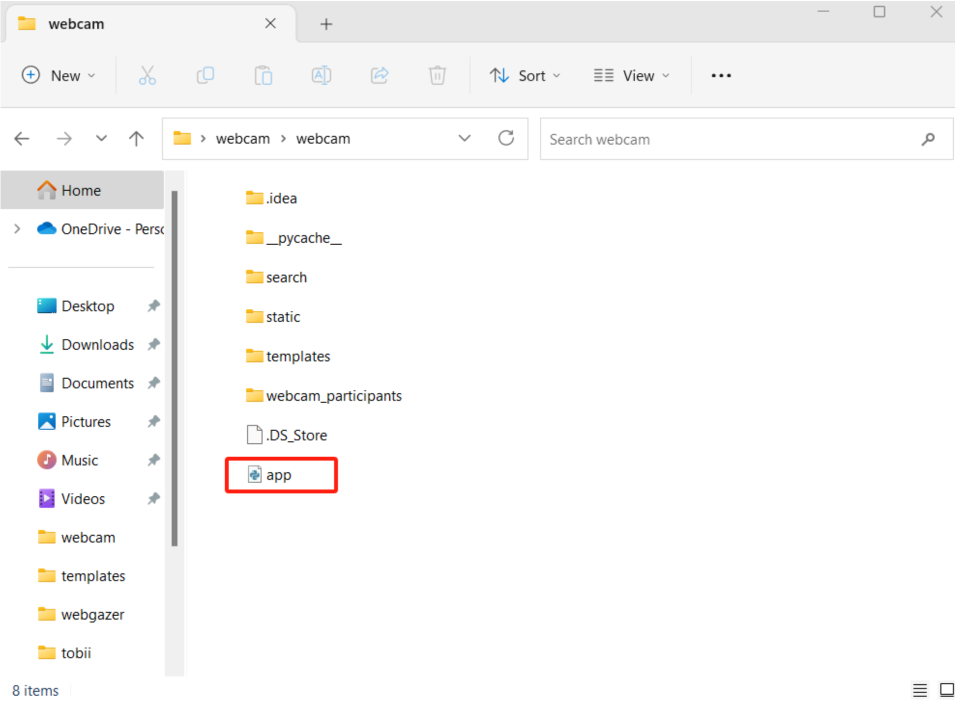
# Webcam Eye Tracker Instruction

Note: Identifiable information is currently obscured with a gray box for double-blind purposes.

## Section A - Before Task

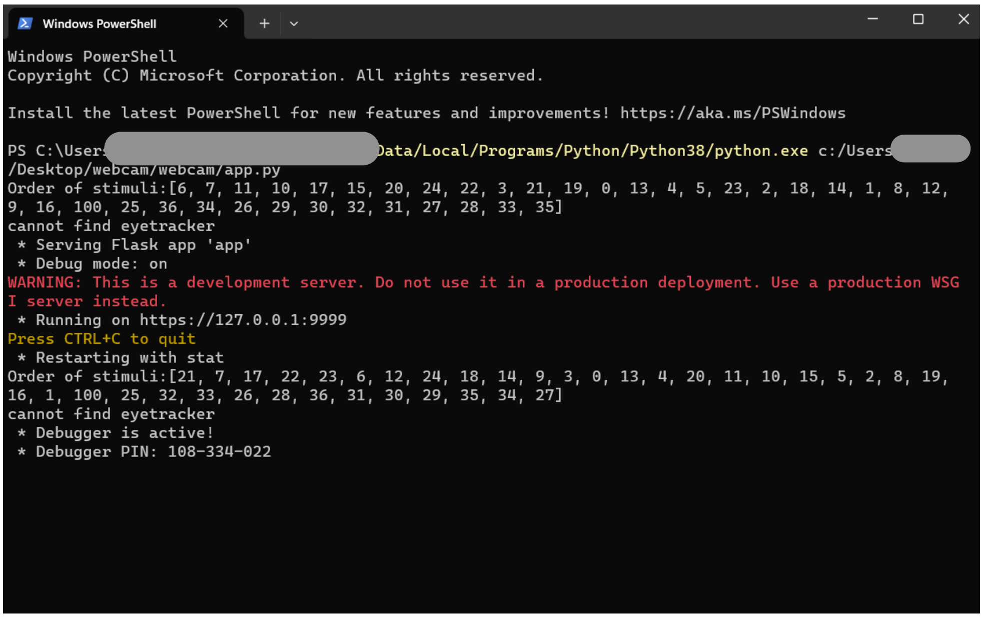
1. **Locate the** `webcam` **directory on Desktop and find the** `app.py` **file in it.**





2. **Run app.py file. There may be two ways (Terminal / IDE):**

a. Run `app.py` using Terminal



```
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\User[redacted]Data/Local/Programs/Python/Python38/python.exe c:/Users[redacted]
/Desktop/webcam/webcam/app.py
Order of stimuli:[6, 7, 11, 10, 17, 15, 20, 24, 22, 3, 21, 19, 0, 13, 4, 5, 23, 2, 18, 14, 1, 8, 12,
9, 16, 100, 25, 36, 34, 26, 29, 30, 32, 31, 27, 28, 33, 35]
cannot find eyetracker
 * Serving Flask app 'app'
 * Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSG
I server instead.
 * Running on https://127.0.0.1:9999
Press CTRL+C to quit
 * Restarting with stat
Order of stimuli:[21, 7, 17, 22, 23, 6, 12, 24, 18, 14, 9, 3, 0, 13, 4, 20, 11, 10, 15, 5, 2, 8, 19,
16, 1, 100, 25, 32, 33, 26, 28, 36, 31, 30, 29, 35, 34, 27]
cannot find eyetracker
 * Debugger is active!
 * Debugger PIN: 108-334-022
```
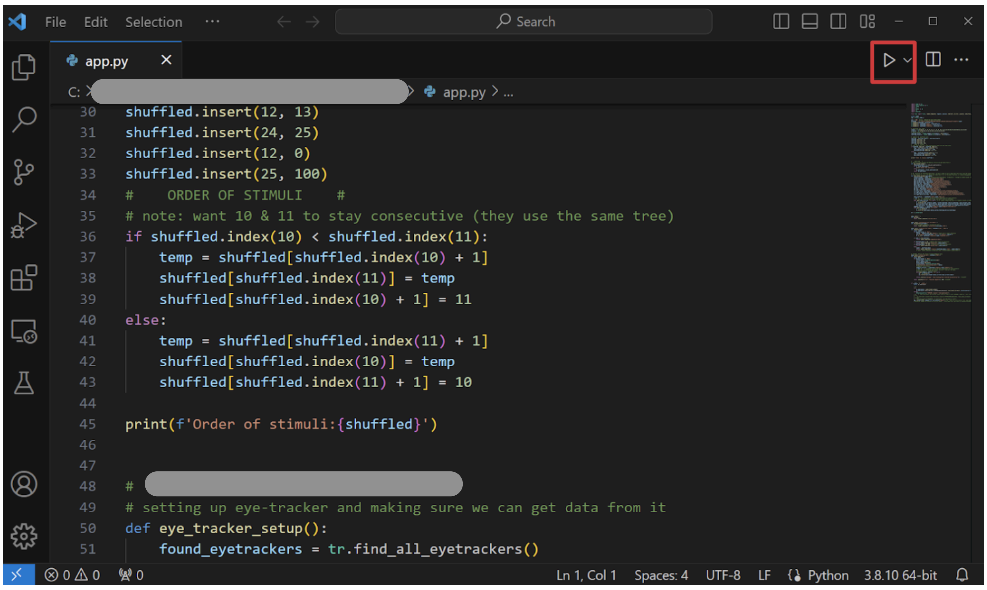
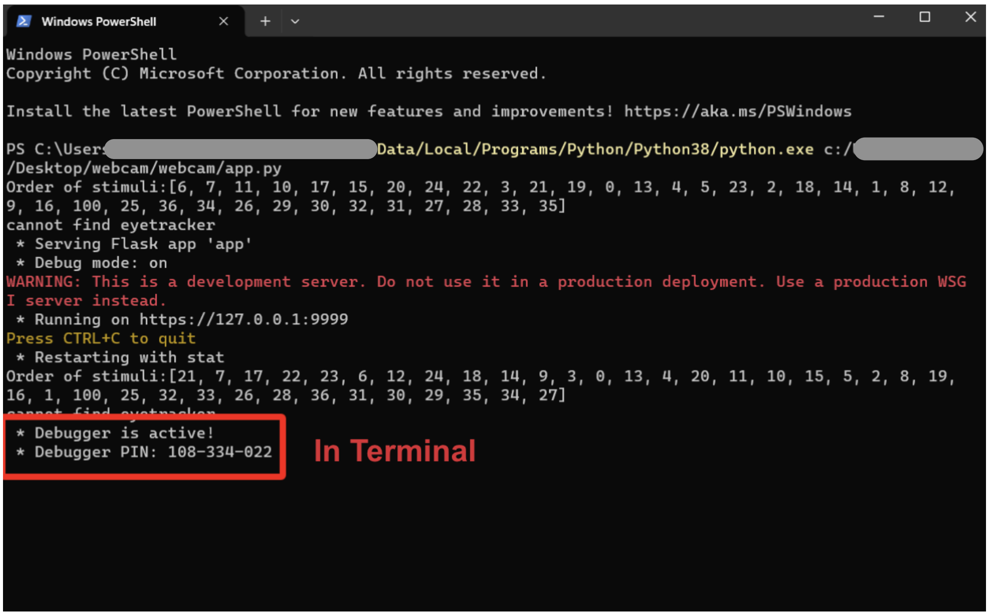

b. Run `app.py` using IDE (e.g., VS Code): you may click the start button on the right top



```python
shuffled.insert(12, 13)
shuffled.insert(24, 25)
shuffled.insert(12, 0)
shuffled.insert(25, 100)
#    ORDER OF STIMULI    #
# note: want 10 & 11 to stay consecutive (they use the same tree)
if shuffled.index(10) < shuffled.index(11):
    temp = shuffled[shuffled.index(10) + 1]
    shuffled[shuffled.index(11)] = temp
    shuffled[shuffled.index(10) + 1] = 11
else:
    temp = shuffled[shuffled.index(11) + 1]
    shuffled[shuffled.index(10)] = temp
    shuffled[shuffled.index(11) + 1] = 10

print(f'Order of stimuli:{shuffled}')


# [redacted]
# setting up eye-tracker and making sure we can get data from it
def eye_tracker_setup():
    found_eyetrackers = tr.find_all_eyetrackers()
```

3. **When you see the following information in your Terminal or IDE Terminal, it means the Webcam Eye Tracker is running successfully:**

In Terminal:



```
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\User[redacted]Data/Local/Programs/Python/Python38/python.exe c:/[redacted]
/Desktop/webcam/webcam/app.py
Order of stimuli:[6, 7, 11, 10, 17, 15, 20, 24, 22, 3, 21, 19, 0, 13, 4, 5, 23, 2, 18, 14, 1, 8, 12,
9, 16, 100, 25, 36, 34, 26, 29, 30, 32, 31, 27, 28, 33, 35]
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 * Restarting with stat
Order of stimuli:[21, 7, 17, 22, 23, 6, 12, 24, 18, 14, 9, 3, 0, 13, 4, 20, 11, 10, 15, 5, 2, 8, 19,
16, 1, 100, 25, 32, 33, 26, 28, 36, 31, 30, 29, 35, 34, 27]
cannot find eyetracker
 * Debugger is active!
 * Debugger PIN: 108-334-022
```
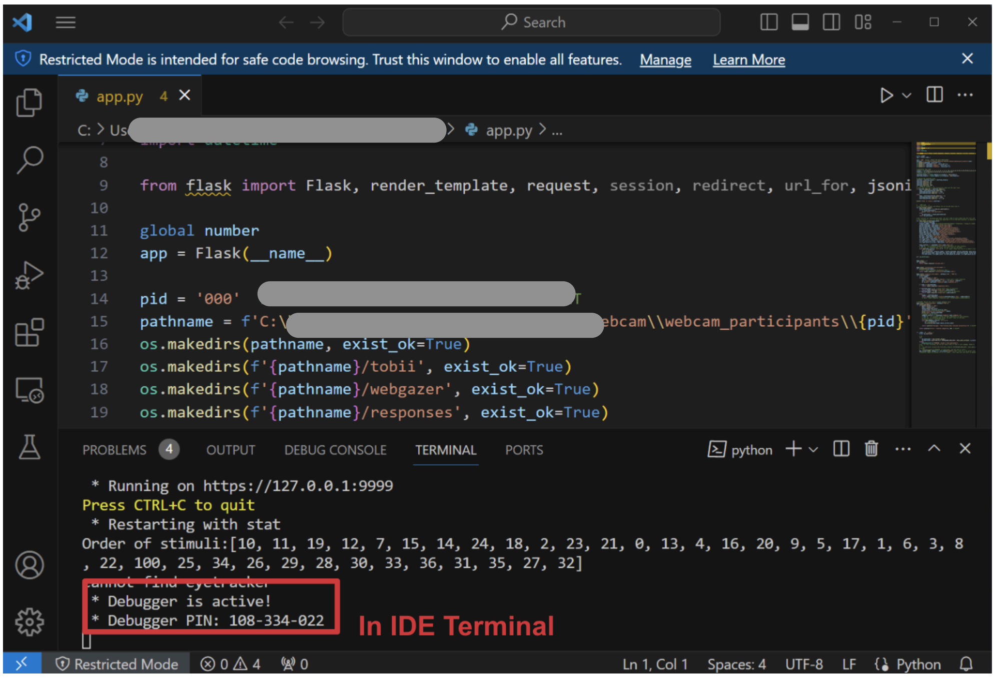

In Terminal

In IDE Terminal:

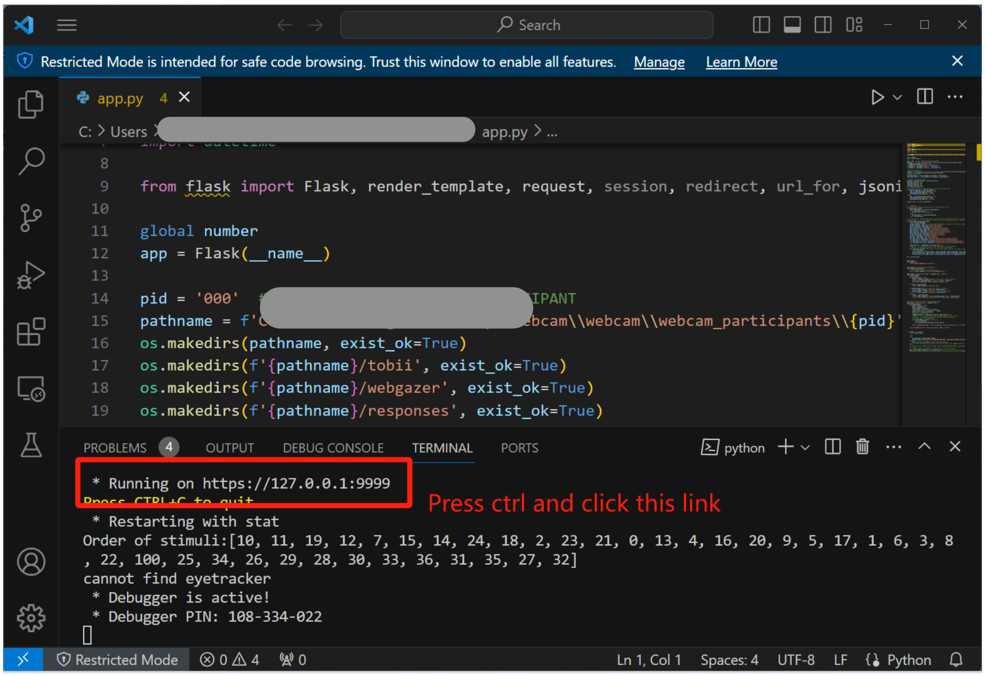


```
from flask import Flask, render_template, request, session, redirect, url_for, jsoni

global number
app = Flask(__name__)

pid = '000' [redacted]
pathname = f'C:\[redacted]ebcam\\webcam_participants\\{pid}'
os.makedirs(pathname, exist_ok=True)
os.makedirs(f'{pathname}/tobii', exist_ok=True)
os.makedirs(f'{pathname}/webgazer', exist_ok=True)
os.makedirs(f'{pathname}/responses', exist_ok=True)
```

```
 * Running on https://127.0.0.1:9999
Press CTRL+C to quit
 * Restarting with stat
Order of stimuli:[10, 11, 19, 12, 7, 15, 14, 24, 18, 2, 23, 21, 0, 13, 4, 16, 20, 9, 5, 17, 1, 6, 3, 8
, 22, 100, 25, 34, 26, 29, 28, 30, 33, 36, 31, 35, 27, 32]
cannot find eyetracker
 * Debugger is active!
 * Debugger PIN: 108-334-022
```

In IDE Terminal

4. **Next, open this link in your browser [https://127.0.0.1:9999](https://127.0.0.1:9999) (We recommend using Chrome). If you want to open the link through IDE or Terminal directly, you may press `ctrl` and click the link at the same time:**



Restricted Mode is intended for safe code browsing. Trust this window to enable all features. Manage Learn More

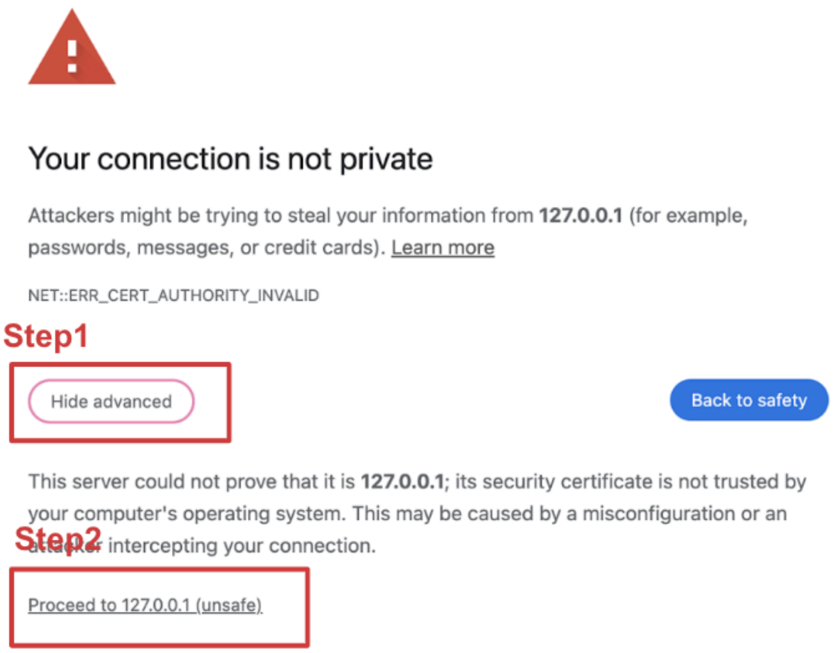
```
import datetime

from flask import Flask, render_template, request, session, redirect, url_for, jsoni

global number
app = Flask(__name__)

pid = '000'  #[redacted]IPANT
pathname = f'C[redacted]bcam\\webcam\\webcam_participants\\{pid}'
os.makedirs(pathname, exist_ok=True)
os.makedirs(f'{pathname}/tobii', exist_ok=True)
os.makedirs(f'{pathname}/webgazer', exist_ok=True)
os.makedirs(f'{pathname}/responses', exist_ok=True)
```

```
 * Running on https://127.0.0.1:9999
Press CTRL+C to quit
 * Restarting with stat
Order of stimuli:[10, 11, 19, 12, 7, 15, 14, 24, 18, 2, 23, 21, 0, 13, 4, 16, 20, 9, 5, 17, 1, 6, 3, 8
, 22, 100, 25, 34, 26, 29, 28, 30, 33, 36, 31, 35, 27, 32]
cannot find eyetracker
 * Debugger is active!
 * Debugger PIN: 108-334-022
```

Press ctrl and click this link

5. **Make sure to MAXIMISE the browser window before the next step!**

6. **You may see this page first. Follow the steps below:**



Your connection is not private

Attackers might be trying to steal your information from **127.0.0.1** (for example, passwords, messages, or credit cards). Learn more

NET::ERR_CERT_AUTHORITY_INVALID

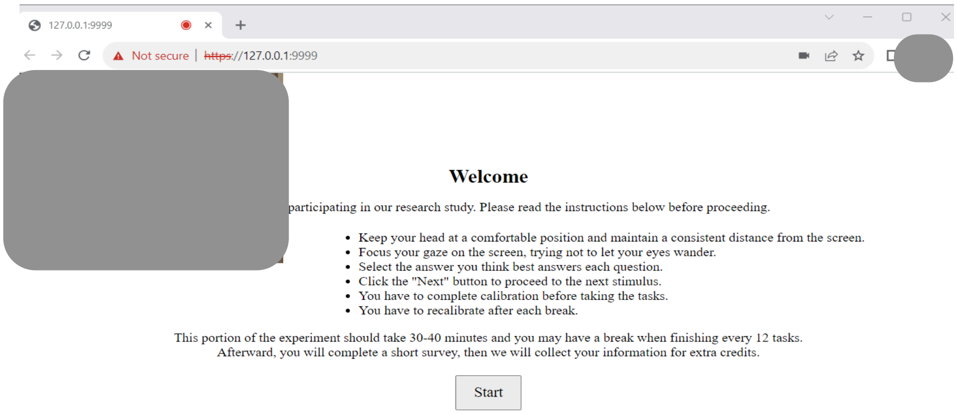
Step1

This server could not prove that it is **127.0.0.1**; its security certificate is not trusted by your computer's operating system. This may be caused by a misconfiguration or an attacker intercepting your connection.

Step2

Proceed to 127.0.0.1 (unsafe)

7. **Next, you will see the welcome page and a small window on the top left of the page in some seconds, and then you are ready to start:**



[redacted]

[redacted]

## Welcome

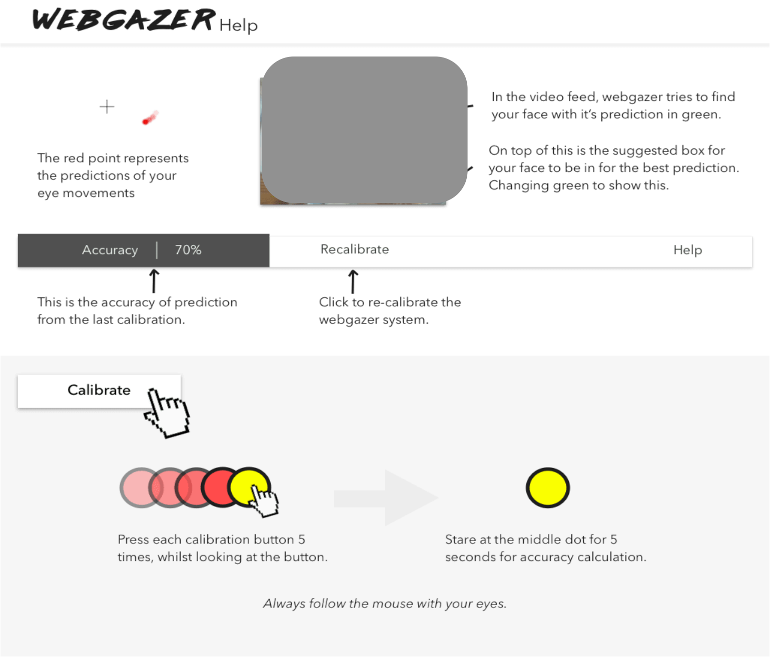
participating in our research study. Please read the instructions below before proceeding.

- Keep your head at a comfortable position and maintain a consistent distance from the screen.
- Focus your gaze on the screen, trying not to let your eyes wander.
- Select the answer you think best answers each question.
- Click the "Next" button to proceed to the next stimulus.
- You have to complete calibration before taking the tasks.
- You have to recalibrate after each break.

This portion of the experiment should take 30-40 minutes and you may have a break when finishing every 12 tasks.
Afterward, you will complete a short survey, then we will collect your information for extra credits.

8. **Next, you will be directed to the** `calibration` **page and do a** `calibration` **yourself.**

   a. How to calibrate yourself: please click all the red circles on the page until they turn yellow. When you complete the calibration, you will receive a notification and see your calibration accuracy on the left top of the page. If the accuracy is **below 70%, please recalibrate!**



[redacted]

The red point represents the predictions of your eye movements

In the video feed, webgazer tries to find your face with it's prediction in green.

On top of this is the suggested box for your face to be in for the best prediction. Changing green to show this.

This is the accuracy of prediction from the last calibration.

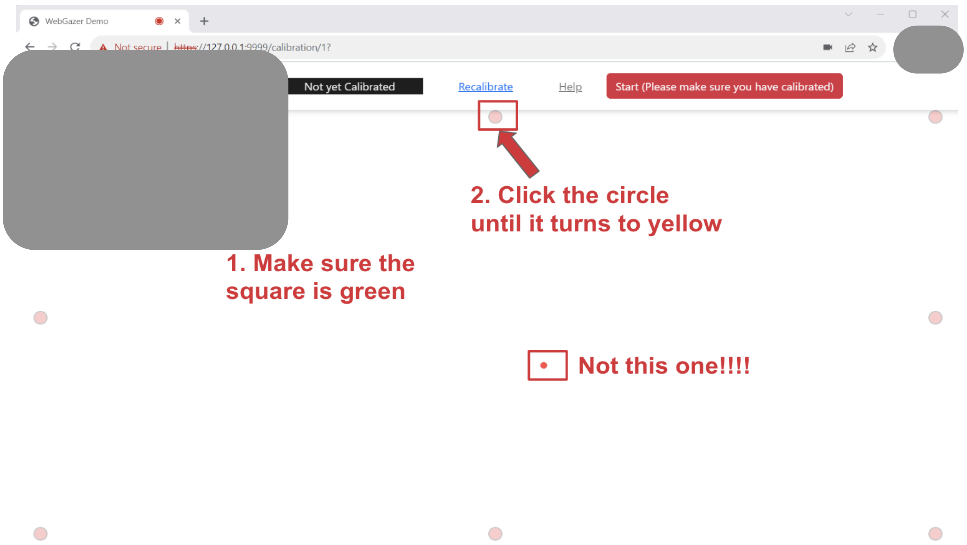
Click to re-calibrate the webgazer system.

Press each calibration button 5 times, whilst looking at the button.

Stare at the middle dot for 5 seconds for accuracy calculation.

*Always follow the mouse with your eyes.*

   b. The calibration page looks like this:

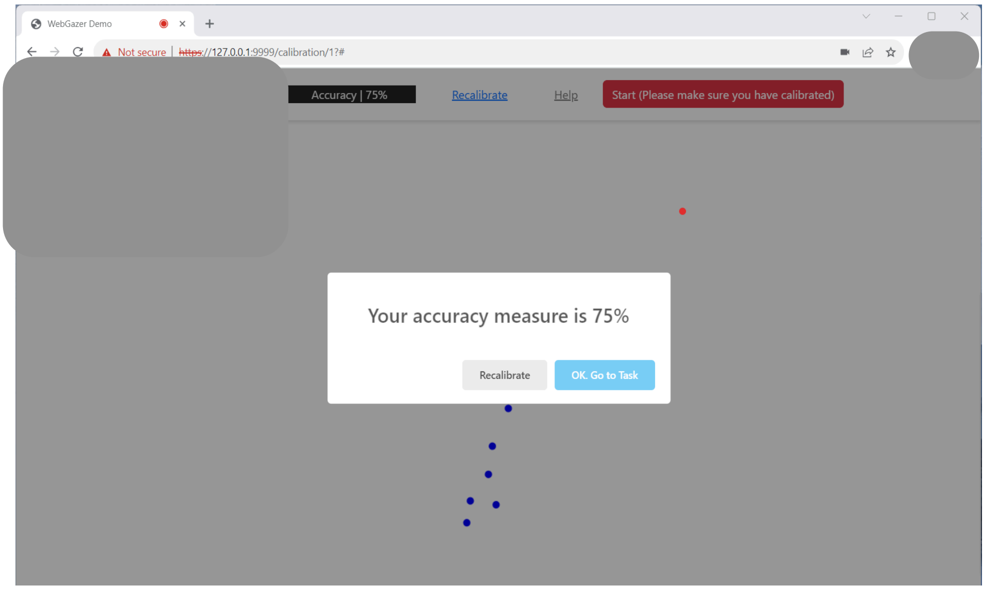

WebGazer Demo
Not secure | ~~https~~://127.0.0.1:9999/calibration/1?
[redacted]
[redacted]
Not yet Calibrated
Recalibrate
Help
Start (Please make sure you have calibrated)

2. Click the circle until it turns to yellow

1. Make sure the square is green

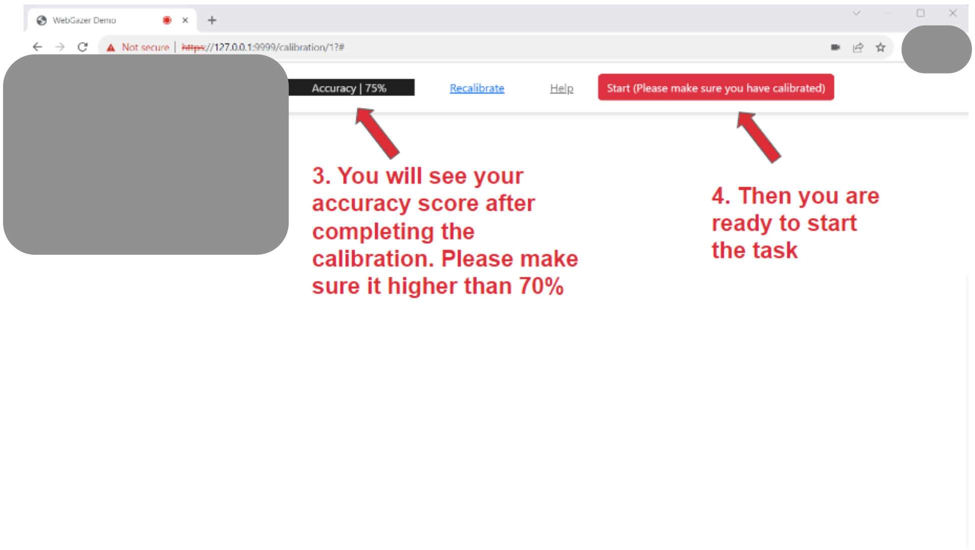
Not this one!!!!

c. After you click all of the 9 circles and make them turn yellow, you will see your accuracy score on the left top of the page:


WebGazer Demo
Not secure | ~~https~~://127.0.0.1:9999/calibration/1?#
[redacted]
[redacted]
Accuracy | 75%
Recalibrate
Help
Start (Please make sure you have calibrated)
Recalibrate
OK. Go to Task

Your accuracy measure is 75%

d. If the score exceeds 70%, you can click the Start button on the top of the page to start your tasks.


WebGazer Demo
Not secure | https://127.0.0.1:9999/calibration/1?#
Accuracy | 75%
Recalibrate
Help
Start (Please make sure you have calibrated)

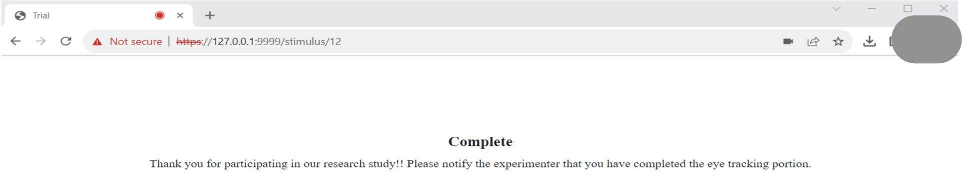
3. You will see your accuracy score after completing the calibration. Please make sure it higher than 70%

4. Then you are ready to start the task

e. You will have a break during the task, and you will be directed to the calibration page after the break. So please repeat these procedures when you do the calibration yourself, thank you:)

## Section B - After Task

9. **After you complete all of the 20 tasks, you will see this completion page and you can then close your browser. Don't forget to stop the `app.py` file in the terminal using `ctrl+c`**



Complete

Thank you for participating in our research study!! Please notify the experimenter that you have completed the eye tracking portion.

**Thank you so much for your participation again. We really appreciate your time! Please let me know if you have any questions!**