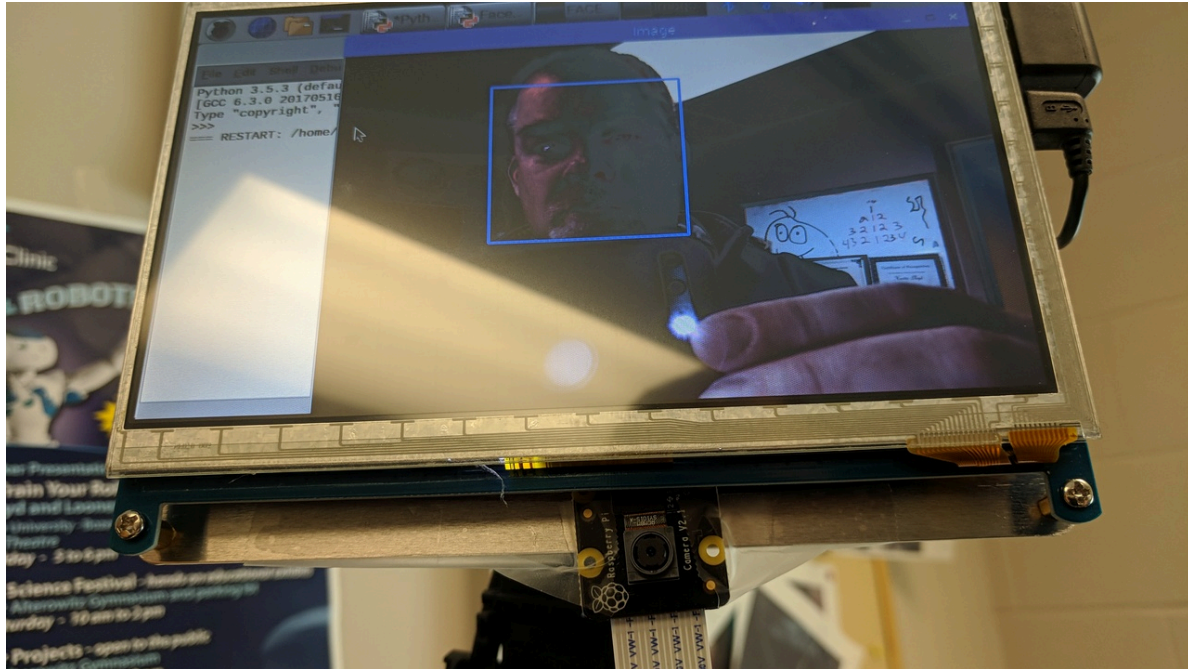


Robot and Human interaction:



Steps:

1. Using OpenCV and the PiCams on the robots do face recognition
 - a. Your robot will use the cameras to do a little search back and forth, up and down, slowly until it finds a human face.
2. When a face is recognized you will have the robot say "hello human"
 - a. It should only say this once even if it loses the face for a few seconds.
 - b. To get this to work you must have a connection between your python code and the Android phone. See the section **"Code I will give you"** below.
3. If the robot loses the face for 10-15 seconds then you reset and wait for another human face.
4. The next face after 10-15 seconds will get a hello again. For debugging you might want to set it at 3 seconds at first, then swap it to 15 when you have it running.
5. This next part, after you find a human you will assume the person doesn't move their feet anymore.
 - a. With the first recognition of the face, center the robot so it is facing the person.
 - i. You will need to know the value of your neck servos and adjust the wheels accordingly.
 - ii. Center the screen on the person again, hopefully with the screen facing forward now.
 - b. Then you will have your robot move to the proper distance from the person.
 - c. If the person is too close, the robot will move back.

- d. Too far and it will move closer. (these distances will be given so everyone is on same page).
6. Once the robot is the proper distance don't move the robot back and forth any more, just move one time to the proper distance.....we are going to assume the person found won't move again.....except in the next step.
7. The robot should use its' neck servos only to center the person's face in the screen. Leave a decent amount of play as the general middle of the screen so you don't have the head jerking back and forth a lot. But if the person leans over toward the edge of the screen the robot should move the screen/camera to center the person's face.

More Vital Information, clarification:

- Anytime a person is lost for 15 seconds everything resets to no human has been found and the step one search for robot starts over.
- Once a human is found, say "hello human", move body to center person, then move to proper distance.....once these steps are done do not change these movements until the human has been lost for 15 seconds.
- After the robot has moved the only movement after should be moving the neck servos to keep the human centered as best as possible.

What I will give you.....

I will cover all of the given code and the code you must incorporate in the video lecture for March 25th.

I will do, give all the Android programming, once we have it loaded on the phones they will all be set up, but if you want it on your phone which you can do you, you must compile and run it yourself.

You will have to incorporate Python client code that I will give you into your Python code.

*****You will have to set up the phones so the Raspberry Pi and the Phone set up a network when you run the program on the phone. There are some settings on the phone that must be turned on for this to work.

This project will be demo'd for a grade on Wednesday April 3rd and Thursday April 4th, and Friday April 5th (I will be out of town on April 5th so Jici will be on here own).