Instructions to install the MemoryPalace system on Moverio

Documented by Siddhartha Datta, sdatta@berkeley.edu

Step 1:

Install DroidCam on both the Moverio device and on server PC. The installation files are in the “DroidCam files” directory.

Then load the DroidCam app on the Moverio device to start a video capture, and start the DroidCam application on the PC to stream footage. You may connect via WiFi or USB.

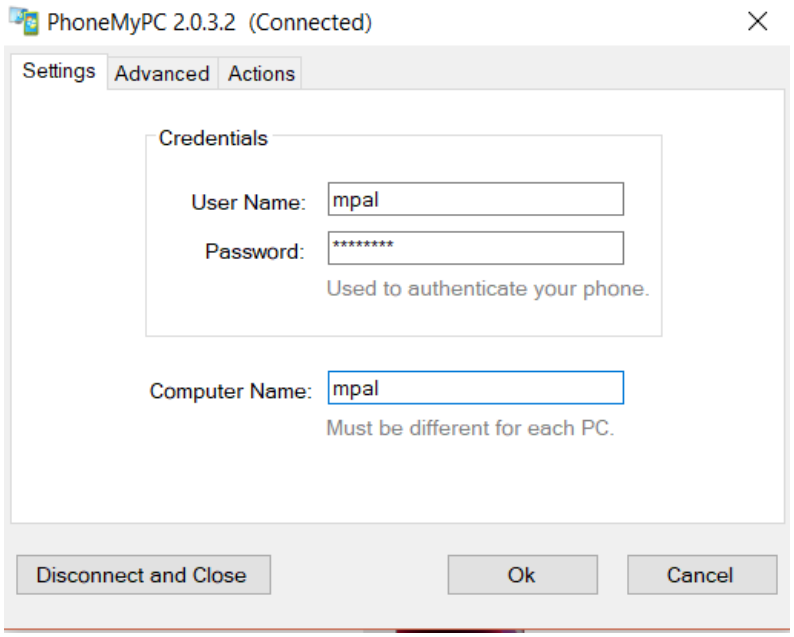
If you see footage streaming, you have successfully established a connection between the Moverio device and your server PC.

Step 2:

Install PhoneMyPC for both the Moverio device and the PC. Its purpose is to stream the processed footage on the PC back to the device for streaming (since the object detection is carried out on the PC).

The files are located in the “PhoneMyPC files” folder.

Once the files are installed, launch the PC application of PhoneMyPC, and set the username, password, and computer name.



Launch the application on the Moverio device as well, and enter the same username, password and computer name. You should see your server PC’s name, and if you click it, your server PC’s screen will be streamed live. We will be displaying the processed output of the Moverio device on the server PC, thus we stream it over directly.

Step 3:

Enter the following directory:

“\Moverio-MemoryPalace-Instructions\Calhacks-5.0\Object-Detection-On-Live-Video-Feed\models\object_detection”

You will find a jupyter notebook titled

“object_detection_tutorial_Webcam_WORKING_ANDROID-updated.ipynb”.

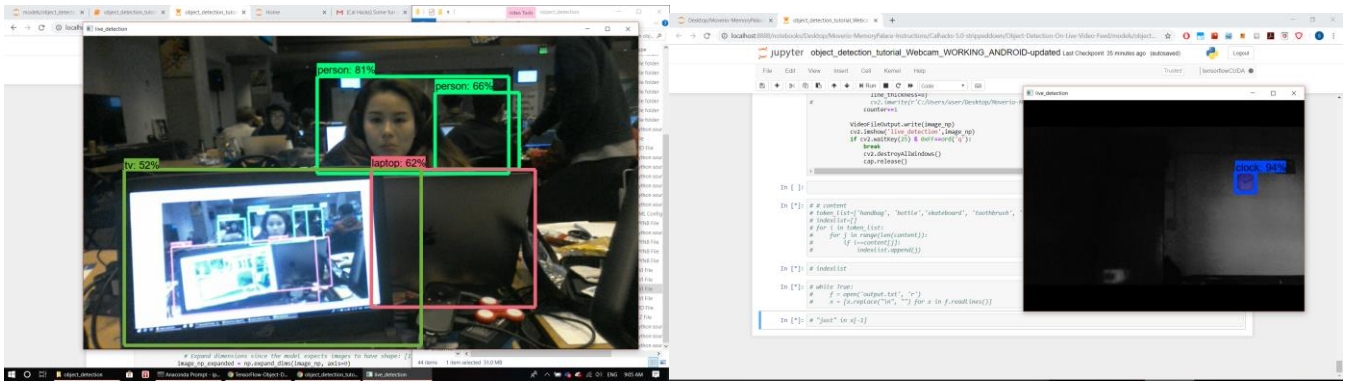
If you run the whole notebook, the object detection algorithm should start running. Missing libraries may be listed as Import Errors; after installing missing libraries, notebook should be able to process.

A popup of the processed video should appear, similar to the image below (except the current algorithm should display everything in gray, and only highlight objects set in configurations only).

Note 1: The current model used was “mask_rcnn_resnet50_atrous_coco_2018_01_28.tar”, and you are free to use any other model by updating the model name in the notebook.

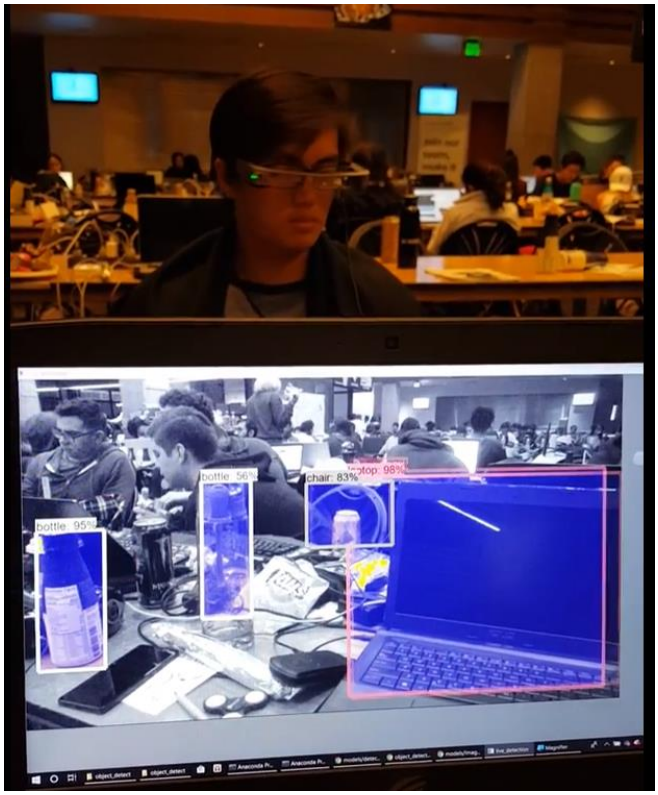
Note 2: Video capture for OpenCV is 1 for the Moverio Device (if connected by USB), and 0 if set to the server PC’s webcam – if there is no PC webcam, then the videocapture index should be set to 0.

Note 3: A recorded output file is also located in the same directory.



If you launched the PhoneMyPC stream on the Moverio device, you should be able to view the processed footage on your own device now.

The output should look similar to this video: https://www.youtube.com/watch?v=s6UWctGQRwA



Step 4 (Additional steps):

Some developments that we worked on but were not able to get running optimally during the hackathon, but are still functional to some extent are the following:

1. In the utils folder, the main configuration file for selective object indexing (i.e. which objects do you want the system to specifically look for) is in the “visualization_utils.py” file. We were able to get selective detection to work, but it lagged a lot and sometimes footage crashed.
2. We had a speech search function for the device, which you can view in the “Speech_Filter.ipynb” file. We did not have a user interface to conduct the interaction between speech and device, but the code is there.