Outline

- **Prerequisite**
- **How to Label**
- **Potential Problems (Go through this part before you start labelling)**

Prerequisite

- Opencv2 or above
- Python3

How to Label

1.Save Label.py (e.g. to Desktop)

If you are labelling in IOS, change “if command == 13” to “if command ==10” (line 70).

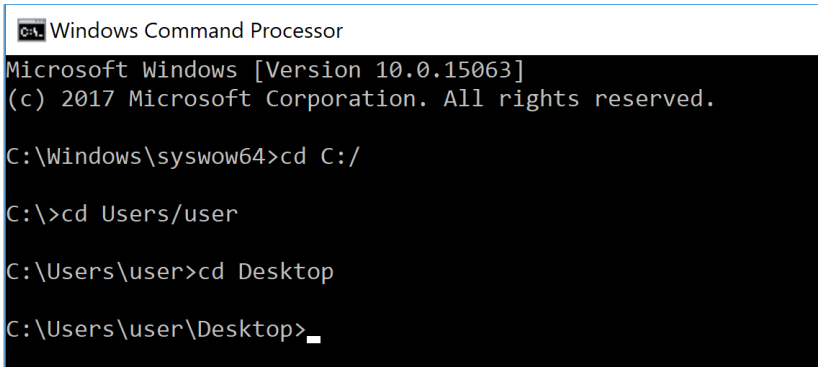
```
    print(command)
    if command == 13:
        with open(os.path.join(working_path,'annotation.txt'),'a') as annotation_file:
            annotation_file.write(" ".join([current_image_path,' '.join(points),'\n']))
        continue
```

2.Change the working path to the image file directory (line 50)

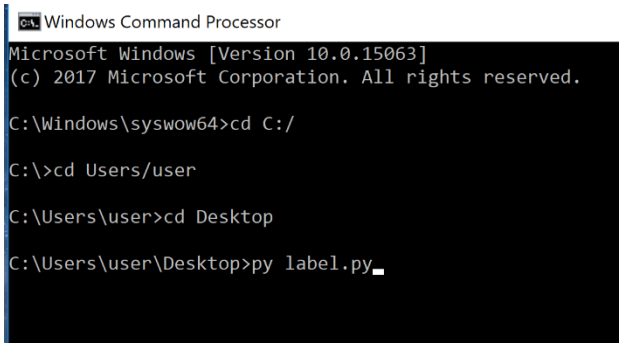
```
working_path = "C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)"
if not os.path.exists(os.path.join(working_path,'image_list.txt')):
```

Note: use “/” instead of “\” for the path.

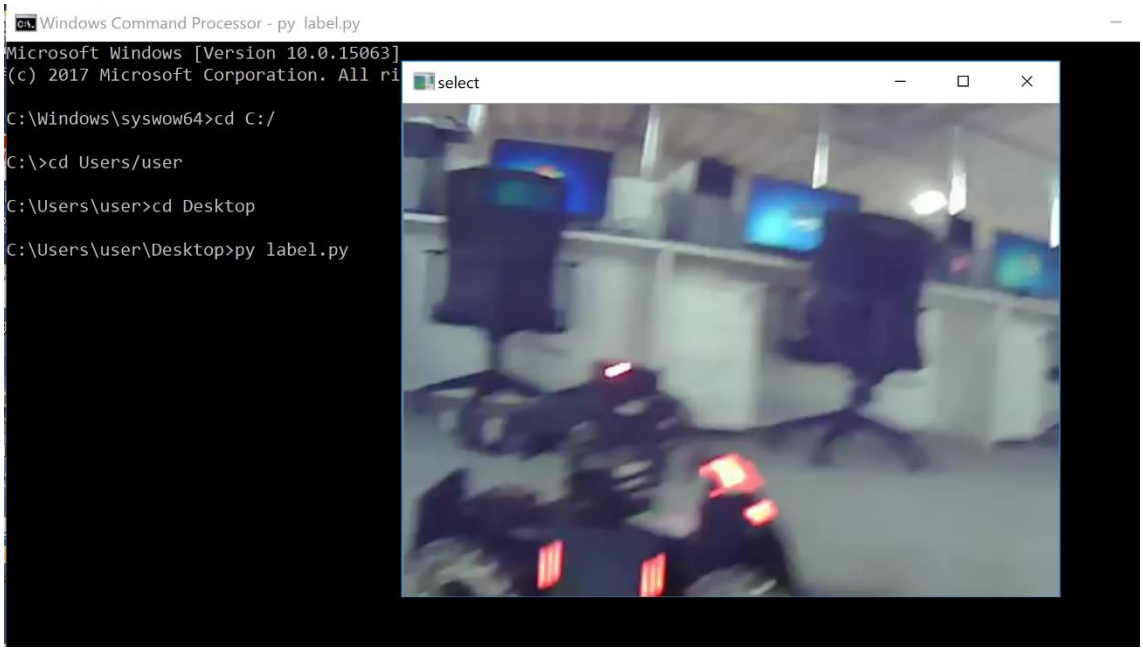
3.In the command window, cd to the directory of label.py



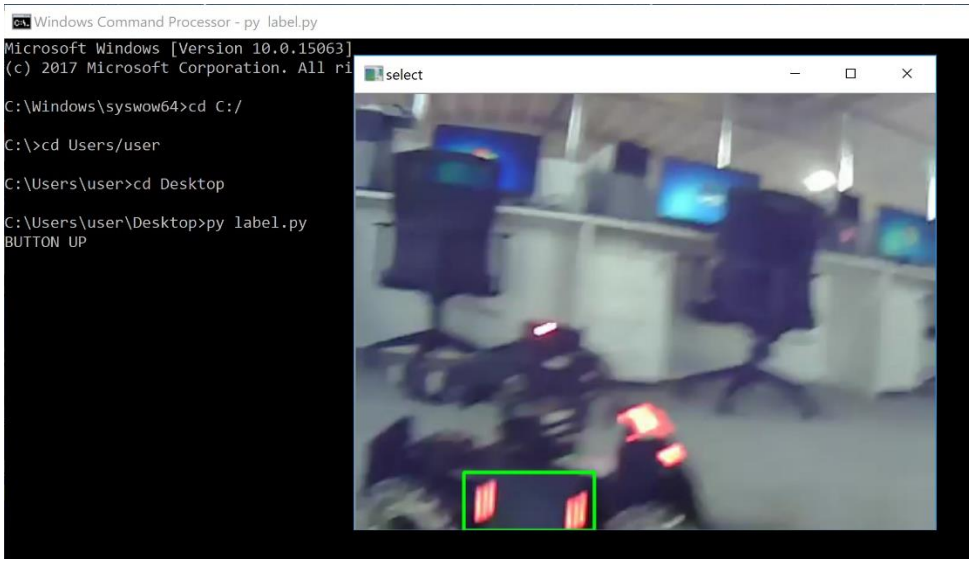
4.Enter “py label.py” to run the code



This would open the first image in a window named “select”:



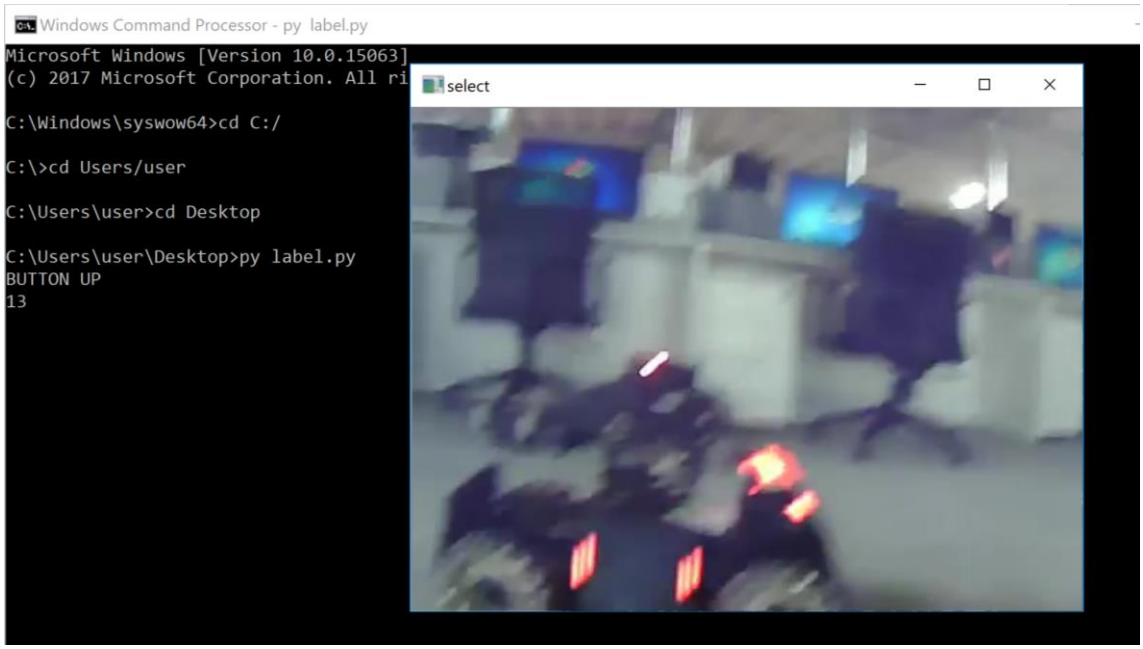
5.Use the mouse to draw the bounding box (just click, drag and release)



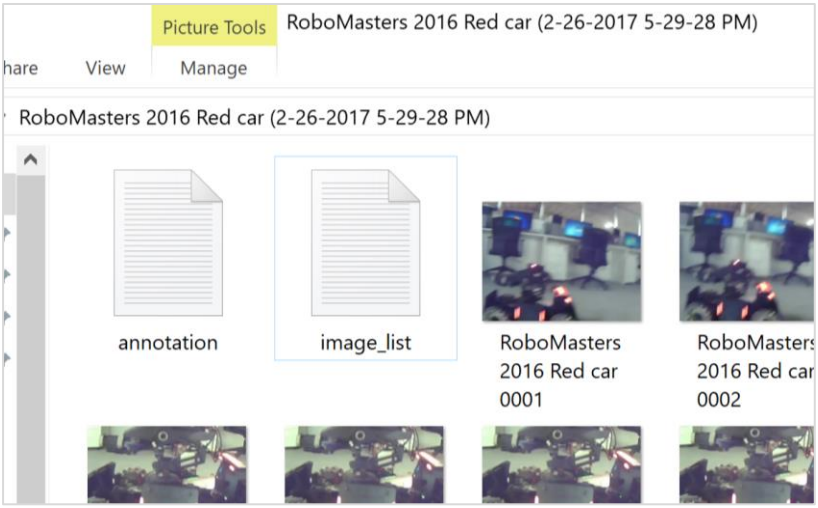
When drawing the bounding box, make sure it contains the entire target. Try to make the target fit the bounding box.

- To save the current label, hit "**Enter**"
- To redo the current label, hit "**R**". **Please redo if the label is not satisfactory.**
- To exit the program, hit "**Esc**". **DO NOT directly close the 'select' window.** Otherwise the current working path will not be saved.

Once "Enter" is hit, the "select" window will automatically display the next image



6.By now the files "image_list" and "annotation" should have been generated in the image file directory.



The “annotation” file should contain the first label

Note: Take care not to modify the annotations accidentally.

7.Continue labelling.

You might realize that each “Button up” in the command window corresponds to a release of the mouse in the current image. While the number represents a key:

13- Enter (10 for ios) ; 114- R ; 27- Esc

Once all the images are labelled, the program will exit automatically. **Change the working path** in label.py to continue labelling the next set of images.

Potential problems

Problem1: Missing entries (i.e. accidentally hit “Enter” before labelling)

If you realize you missed an entry while labelling, just leave it and edit the “annotation” afterwards.

After finishing labelling, you might want to check if you have missed any entries. Missing entries are reflected in the “annotation” file as follows:

annotation - Notepad

File Edit Format View Help

```
C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)\RoboMasters 2016 Red car 0001.jpg 197 360 108 48
C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)\RoboMasters 2016 Red car 0002.jpg 213 357 108 59
C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)\RoboMasters 2016 Red car 0003.jpg 341 326 189 112
C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)\RoboMasters 2016 Red car 0004.jpg 344 322 199 130
C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)\RoboMasters 2016 Red car 0005.jpg 340 315 186 111
C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)\RoboMasters 2016 Red car 0006.jpg 342 310 193 105
C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)\RoboMasters 2016 Red car 0007.jpg
C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)\RoboMasters 2016 Red car 0008.jpg 340 299 192 107
C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)\RoboMasters 2016 Red car 0009.jpg 345 295 196 100
C:/Users/user/Desktop/RoboMasters 2016 Red car (2-26-2017 5-29-28 PM)\RoboMasters 2016 Red car 0010.jpg 346 295 201 102
```

The image "…0007.jpg" was not labelled as the last 4 numbers are missing. In this case, you can delete this line manually. If you don't feel like editing "annotation" on your own, just ask Reinaldo to edit it hahaha.

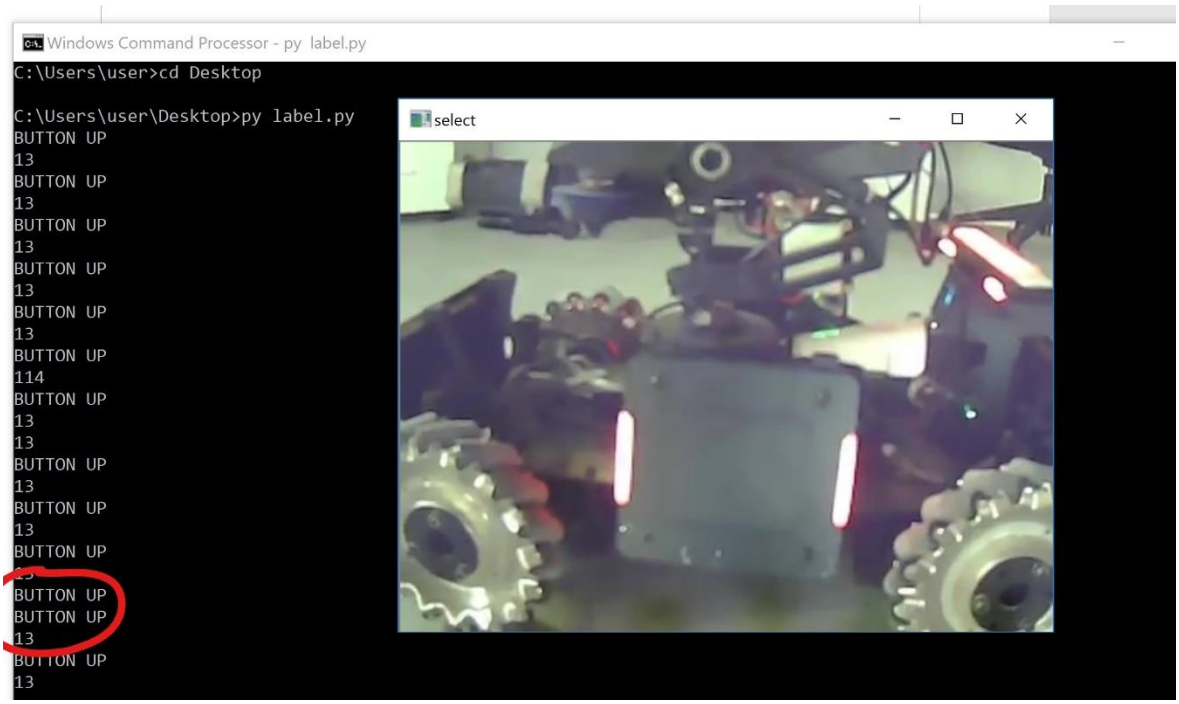
Problem 2: Extra Label (Accidental click on the image)

If your hand gets shaky and accidentally clicks on the image, the click would be registered as a label.

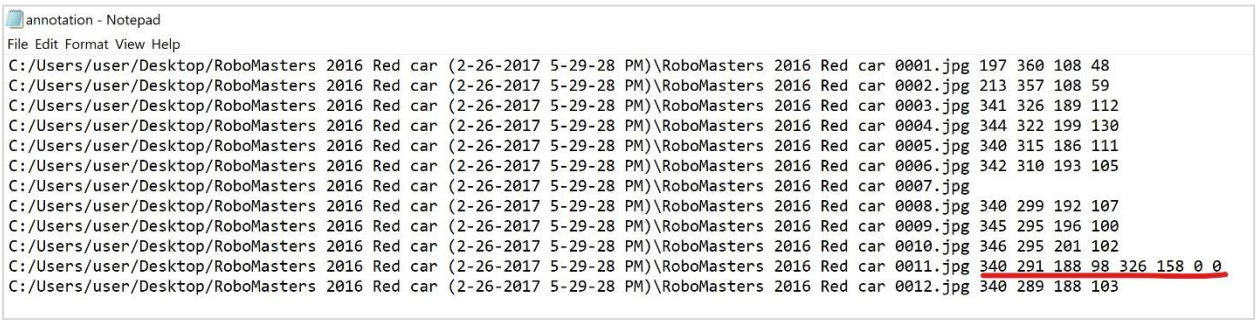
If you haven't hit "Enter", just hit "R" to remove all the labels on the current image and redo the labelling.

If you realize the problem after hitting "Enter", just leave it and edit the "annotation" file after finishing labelling.

If you are not sure whether you have accidentally clicked, check the command window to see if there are extra "Button Up"s.



The corresponding entry in the “annotation” file:



In this example, we can deduce that the second label “326 158 0 0” is invalid since the last two numbers (representing bounding box height and width) are both 0.

You may simply delete the invalid label (4 numbers).

Label all the targets in the image. In “annotation”, there should be **4n** numbers (n: number of targets/labels) at the end of each line.

Problem 3: Wrong Key Pressed

If you hit any keys other than “Enter”, “R” and “Esc”, the code will continue to run. However, the label will not be recorded in “annotation”. Therefore, it does not compromise the integrity of the data.

Since this problem might not be easily detectable, it is important to be careful when hitting the keyboard. Try not to label while you are sleepy.

Problem 4: Out-Of-Bound Target

Sometimes the image might be too big to fit in the “select” window. As a result, the target might be partially or completely invisible. If more than 40% of the target is out of bounds, just discard the entry by simply hitting “Enter” and delete the blank entry from “annotation” afterwards (refer to Problem 1).

Remember: DO NOT to close the “select” window directly.

If you have any doubts regarding the procedure or encounter any other problems, feel free to ask. Happy Labelling :)))