FAQS FOR LESSON-5

IMPORTANT NOTE:-

Don’t Forget to Click That Source Env Button (Blue Button)
Most of the time, Error occurs because you have not pressed it !!
[If you have pressed it & still getting the error then move further to see other reasons for your error]

1. What to do when finished the course? What is next?

Ans:- If you are done with the lessons, make sure to check all the lessons for any unanswered quiz, I did and I found one unanswered quiz 😄.

And also try to keep being active on slack till the end of program by:

- helping others,
- sharing a cool project you have done or you are doing or you just have in mind. You may be able to make a team to work on it here on #projects channel.
- sharing interesting and useful resources on #resources channel
- ....

That would probably increase the chance of getting into the 2nd phase.

2. The Mosca server isn't starting when i am doing node ./server.js . throwing an error ? [Excercise - Server Communication]

Ans :- First, get the MQTT broker and UI installed :-

- cd webservice/server
- npm install
- When complete, cd ../ui
- And again, npm install

You will need four separate terminal windows open in order to see the results. The steps below should be done in a different terminal based on

number. You can open a new terminal in the workspace in the upper left (File>>New>>Terminal).

(Each number below corresponds to a new terminal window)

Get the MQTT broker installed and running.

- cd webservice/server/node-server
- node ./server.js
- You should see a message that Mosca server started..

Get the UI Node Server running.

- cd webservice/ui
- npm run dev
- After a few seconds, you should see webpack: Compiled successfully.

Start the ffserver

- sudo ffserver -f ./ffmpeg/server.conf

Start the actual application.

- First, you need to source the environment for OpenVINO in the new terminal:
- source /opt/intel/openvino/bin/setupvars.sh -pyver 3.5
- To run the app, I'll give you two items to pipe in with ffmpeg here, with the rest up to you:
- -video_size 1280x720
- -i - http://0.0.0.0:3004/fac.ffm

Also be sure to click on the Source Env at the beginning

3. what does this block of code mean? and where do we need to place it?

“topic = "some_string"

client.publish(topic, json.dumps({"stat_name": statistic}))””

Ans:- this is the MQTT client and is publishing the json to the specified <topic>. For the exercise you need to use something like this:
client.publish("speedometer", json.dumps({"speed": speed}))
You can place this code after the inference is made. They use MQTT as a broker between the web app and the python script.

4. On Lesson 5.14, I'm getting the following error:

(venv) root@6cfa502846b4:/home/workspace# python3.5 app.py | ffmpeg -v warning -f rawvideo -pixel_format bgr24 -video_size 1280x720 -framerate 24 -i - http://0.0.0.0:3004/fac.ffm
ImportError: numpy.core.multiarray failed to import
Traceback (most recent call last):
File "app.py", line 4, in <module>
import cv2
ImportError: numpy.core.multiarray failed to import
I tried
pip3 install numpy --upgrade
pip3 install -U opencv-python
and moving numpy import prior to cv import
but that didn't resolve the error ?

Ans :- For others the video and text differ. The video at 1:20 shows port 1883 (but also mentions port 3001-3004 port restriction in the environment) while the text lists 3001. The video also shows python3.5 (which doesn't work) vs python3 as the first part of the command. You have to change the port to the one mentioned in the class in the code that you have written .

5. I already did the npm install but when I run the node ./server.js I get this error → throw err ; Error : cannot find module ‘mosca’?

Ans : Reset the workspace (this also worked for some)
Or to fix this issue install mosca by doing:
npm install mosca
NOTE: you have to run the command in the web service directory, that is in "webservice"

6. In the exercise about processing model outputs, the reason we do: timestamp = counter / 30 is because the video is 30 fps?

Ans : 30 frames per second, dividing the counter gives us number of seconds. This is because cv2.VideoCapture processes its input one frame at a time.Here's the relevant part from the instructions:
Note: It's important to consider whether you really want to output a warning every single time both pets are on-screen - is your warning helpful if it restarts every 30th of a second, with a video at 30 fps?

7. cv2.videoCapture() can be used both with images and videos ?

```
pipe:: Invalid data found when processing input
Traceback (most recent call last):
 File "app.py", line 151, in <module>
   main()
 File "app.py", line 147, in main
   infer_on_video(args, model)
 File "app.py", line 131, in infer_on_video
   sys.stdout.buffer.write(out_frame)
BrokenPipeError: [Errno 32] Broken pipe
```

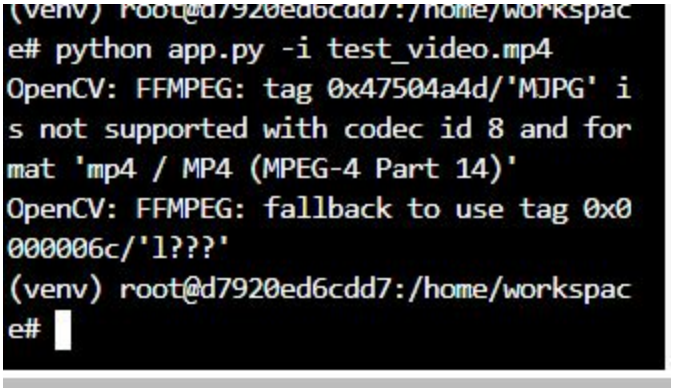
Ans : yes we can, for images you can also use cv2.imread. videoCapture() can be used for video capturing from video files, image sequences or cameras.

Ans : Here you need to use some arguments that are not in the instructions in the exercise.
Try this: python app.py | ffmpeg -v warning -f rawvideo -pixel_format bgr24 -video_size 1280x720 -framerate 24 -i - http://0.0.0.0:3004/fac.ffm
I don't know if we need the -v one, but the rest is to define the format of the video and the -i is for configuration of the ffmpeg server

8. Am always getting BrokenPipeError: [Errno 32] Broken pipe when trying to start the actual application. This occurs at sys.stdout.buffer.write(out_frame). Any suggestions?

Ans :- Use **-f rawvideo** argument for ffmpeg

9. while inputting for test_video I get the following error. Please help me to solve this?



Ans :- change your video output file (out variable) to the following, may be you used MAC style instead of linux

```
# Create a video writer for the output video
  # The second argument should be `cv2.VideoWriter_fourcc('M','J','P','G')`
  # on Mac, and `0x00000021` on Linux
  out = cv2.VideoWriter('out.mp4', 0x00000021, 30, (width,height))
```

In addition to this, because our workspaces are Linux based workstations, you'll also need to use stack frame you get from frame = cv2.Canny(frame, width, height) using frame = np.dstack((frame, frame, frame)) command line.

Also, make sure you have ffserver and ui workspace working in the terminals

10. out = cv2.VideoWriter('out.mp4', 0x00000021, 30, (100,100)), What does the 30 stand for? Is it fps?

Ans:- Yes it is FPS , To perceive motion in video you need minimum 24 FPS but min FPS requirement is very subjective and depends on content and viewer's perception. For e.g. gaming require higher FPS (60) to have good experience . See this article https://www.techsmith.com/blog/frame-rate-beginners-guide/

11. In opencv exercise I got "mjpg is not supported" error. What am I doing wrong here?

Ans :- If you are using linux system then for cv2.VideoWriter you have to use 0x00000021 instead of cv2.VideoWriter_fourcc .

12. how could one retrieve accidentally deleted files such as test videos, within the workspace?

Ans:- There is a menu->backup/reset option on the left bottom corner of the workspace.

13. In the cat and dog exercises I'm trying to put warning text on video frames and save the video as mp4 file. I'm using cv2.putText but I can only see the last frame in the whole video while I save it as mp4. I use cv2 out.write(frame) at end of the Inference output to save as video file

Ans:- I guess you should open the video Writer only once and the write the different frames while you are looping to get each input frame.

If instead the videoWriter is inside the loop, you would rewrite the video and have only the last frame saved!

14. How to play a video/image on Udacity workspace without downloading (Tutorial - no sound)

Ans:- Tutorial Video Link, Click to open

```
from IPython.display import Video
Video("test_video.mp4")
```

Docs for Video:
https://ipython.readthedocs.io/en/stable/api/generated/IPython.display.html#IPython.display.Video

You may do similar for images:

```
from IPython.display import Image
Image("test_image.jpg")
```

Docs for Image:
https://ipython.readthedocs.io/en/stable/api/generated/IPython.display.html#IPython.display.Image

15. I have working video stream and mqtt server receives events about detected objects but I see empty web page.

Ans:- You have not done the step of upgradation before: npm install -g npm to upgrade to latest version of npm.

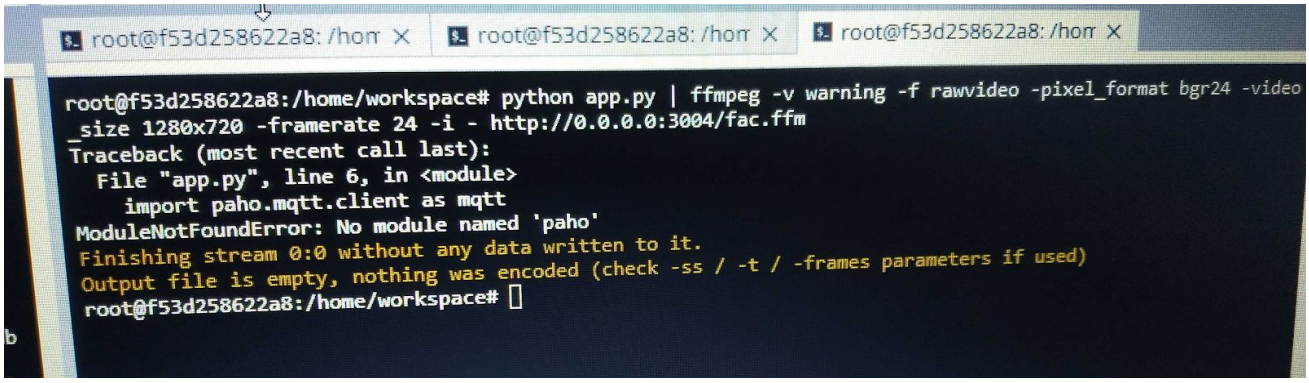
16. pipe:: Invalid data found when processing input, I can't stream the video in the Server Communications exercise

Ans :- You need to pass -f rawvideo -pixel_format bgr24 to ffmpeg

17. The masked output file in the directory - that is not used by the app as far as I can tell, correct? It's just a reference to show us what the masking operation looks like?

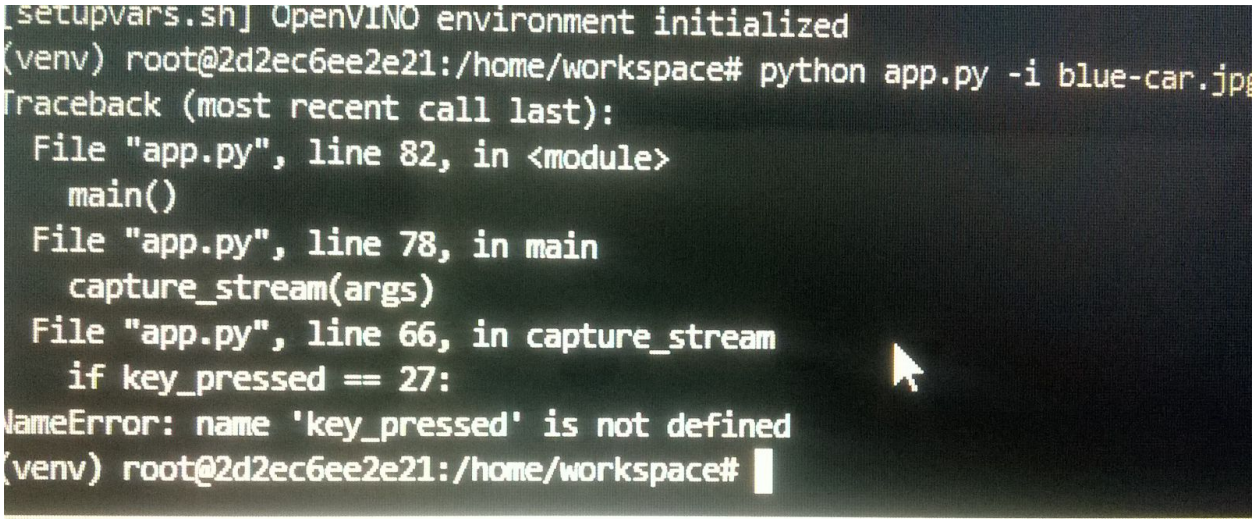
Ans :- If you are referring to out_example.mp4 file in Exercise 13, then yes. It is not used by application. It is meant to show how the output will look like.
(Or maybe course content creators forgot to delete it after completing their experiments. Who knows.)

18.



Ans :- Try type source /opt/intel/openvino/bin/setupvars.sh -pyver 3.5. And then run your cmd again!! Also, declare → import paho.mqtt.client as mqtt
Check the terminal that run mosca server. Make sure MQTT_PORT is set to 3001

19.



Ans:- Make sure you have defined key_pressed = cv2.waitKey(60). you can define it anywhere before line 66.may be after these lines of code

capture = cv2.VideoCapture(input_stream)

capture.open(args.input)

20. here's a query.how can we deploy the gaze estimation model???there are three different input ??how do I go about it ??

Ans:- It seems that the gaze estimation is not an easy one . Yes you have 3 inputs, one for an image of left eye, one for right eye and one for the 3 angles pitch, yaw and roll of the head pose.

You need to do inference with other models to build these 3 inputs.

There is a demo that do gaze estimation and that doc explains what models to use (https://docs.openvinotoolkit.org/2019_R3.1/_demos_gaze_estimation_demo_README.html).

21. FFPMEG: fallback to use tag 0x0000006c/’???’

Ans:- You have to add 'frame = np.dstack((frame, frame, frame)) after adding Canny Edge Detection to the frame. Also the correct syntax for Linux is: out = cv2.VideoWriter('out.mp4', 0x00000021, 30, (100,100)) ... Don't forget (Ctrl+s) to save for any changes and to delete the old out.mp4.

NOTE :- If you got connection refused error then make sure the source running environment the VENV is for final command

python app.py | ffmpeg -v warning -f rawvideo -pixel_format bgr24 -video_size 1280x720 -framerate 24 -i - http://0.0.0.0:3004/fac.ffm

this one rest will be on simple root terminal keep an eye before running command you may get error

22.

Ans:- use this line out_video = cv2.VideoWriter(str(out_file), 0x00000021, 30, (100,100)) . It is explained in the solution . On Mac, cv2.VideoWriter uses cv2.VideoWriter_fourcc('M','J','P','G') to write an .mp4 file, while Linux uses 0x00000021.
Since , our workspace uses LINUX then use the LINUX one .
Well there is 2nd modif that cannot be guessed without the solution:
On Mac, the output with the given code on using Canny Edge Detection will run fine. However, on Linux, you'll need to use np.dstack to make a 3-channel array to write back to the out file, or else the video won't be able to be opened correctly: frame = np.dstack((frame, frame, frame))

23. My code worked but why the video and image barely showed

Ans :- It is because of the cv2.resize to (100,100) we are asked to do for. (100,100) is quiet small. You can try to change these values to see a change in your videos

24. `cv2.VideoWriter_fourcc('M','J','P','G')` what is meaning of this syntax and why we use it ?

Ans :- VideoWriter() needs as 2nd argument a 4-character code of codec used to compress the frames. A FourCC ("four-character code") is a sequence of four bytes (typically ASCII) used to uniquely identify data formats. I think 0x00000021 stands for H264.
It is defined in the source of FFMPEG { AV_CODEC_ID_H264, 0x21 },
https://git.videolan.org/?p=ffmpeg.git;a=blob;f=libavformat/isom.c

25. What is the meaning of `60` in below syntax ?

key_pressed = cv2.waitKey(60)

Ans:- waitKey wait for an event (like a keypress) for 60 milliseconds max. If an event has occurred before the call or occurs during the call, it immediately returns. Otherwise it returns after 60 ms.

26. Can someone please help me with this error...Stackoverflow doesn't have answers

SW used: <module 'openvino' from '/opt/intel/openvino_2019.3.376/python/python3.7/openvino/__init__.py'>
cv2 = '4.1.2-openvino'
Note the code works well on the Udacity workspace but not on my PC ?

Ans :- To install openvino, you have to follow the guide https://docs.openvinotoolkit.org/latest/_docs_install_guides_installing_openvino_linux.html . In your error msg, I see:
/home/jenkins/workspace/OpenCV/OpenVINO/build/opencv/modules/videoio/src/cap_gstreamer.cpp
Make sure you have compiled your own version of opencv. From https://stackoverflow.com/questions/12334925/how-combine-gstreamer-and-opencv seems like opencv isnt compatible with my gstreamer.
In future, I will run openvino from a docker container...Simple.After reading the opencv docs, here is how I fixed it...

I needed to setup the correct codec for gstreamer and opencv
See: http://www.fourcc.org/codecs.php.

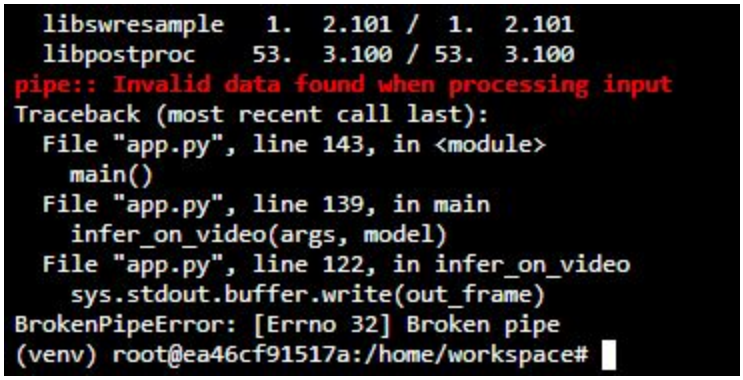
27. What went wrong?

```
(venv) root@ea46cf91517a:/home/workspace/webservice/server/node-server# node ./server.js
{"pid":2785,"hostname":"ea46cf91517a","name":"mosca","level":50,"time":1578846617868,"msg":"Error starting Mosca Server",
"v":1}
events.js:170
      throw er; // Unhandled 'error' event
      ^

Error: listen EADDRINUSE: address already in use :::3001
    at Server.setupListenHandle [as _listen2] (net.js:1259:14)
    at listenInCluster (net.js:1307:12)
    at Server.listen (net.js:1395:7)
    at /home/workspace/webservice/server/node_modules/mosca/lib/server.js:225:16
    at makeCall (/home/workspace/webservice/server/node_modules/fastseries/series.js:119:7)
    at NoResultsHolder.release (/home/workspace/webservice/server/node_modules/fastseries/series.js:67:9)
    at series (/home/workspace/webservice/server/node_modules/fastseries/series.js:39:14)
    at Object.eachSeries (/home/workspace/webservice/server/node_modules/steed/steed.js:47:5)
    at /home/workspace/webservice/server/node_modules/mosca/lib/server.js:211:13
    at makeCall (/home/workspace/webservice/server/node_modules/fastseries/series.js:117:7)
    at ResultsHolder.release (/home/workspace/webservice/server/node_modules/fastseries/series.js:96:9)
    at /home/workspace/webservice/server/node_modules/mosca/lib/server.js:204:9
    at makeCall (/home/workspace/webservice/server/node_modules/fastseries/series.js:117:7)
    at ResultsHolder.release (/home/workspace/webservice/server/node_modules/fastseries/series.js:96:9)
    at /home/workspace/webservice/server/node_modules/ascoltatori/lib/ascoltatori.js:93:9
    at TrieAscoltatore.<anonymous> (/home/workspace/webservice/server/node_modules/ascoltatori/lib/abstract_ascoltatore.j
s:61:7)
    at TrieAscoltatore.emit (events.js:193:13)
    at _addListener (events.js:219:14)
    at TrieAscoltatore.addListener (events.js:267:10)
```

Ans:- It means there is another program is using this port 3001. Have you open 2 terminal that runs the same mosca server? If Yes, Try kill any node process and run again.
To list running node process: ps -e| grep node
After this, you will get :-
(venv) root@ea46cf91517a:/home/workspace# ps -e|grep node
1407 pts/1 00:00:00 node
1431 pts/2 00:00:00 node
1438 pts/2 00:00:08 node
This means that you have killed the another process. Now no error !!

28.

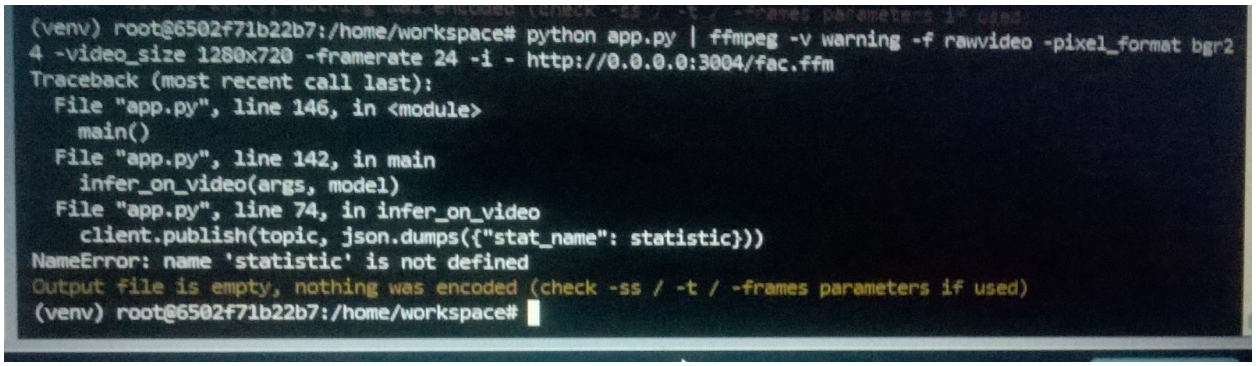


Ans :- Try this command to run → python app.py | ffmpeg -f rawvideo -pixel_format bgr24 -video_size 1280x720 -framerate 25 -i - http://0.0.0.0:3004/fac.ffm

NOTE :-
Bugs and mistakes you might encounter:
Make sure you add - after -i flag while executing the command.
Passing an image directly into the sys.stdout.buffer.write() . I forget to convert it using tostring() method.
Finally, while passing argument to the ffmpeg I need to add some extra arguments to make it work for me. Details in the link https://stackoverflow.com/a/5839058 .

UPDATE:
While watching the solution video, It seems like the conversion mentioned in pt 2 is not necessary. I think the main problem was the pt 3 in my case.

29.



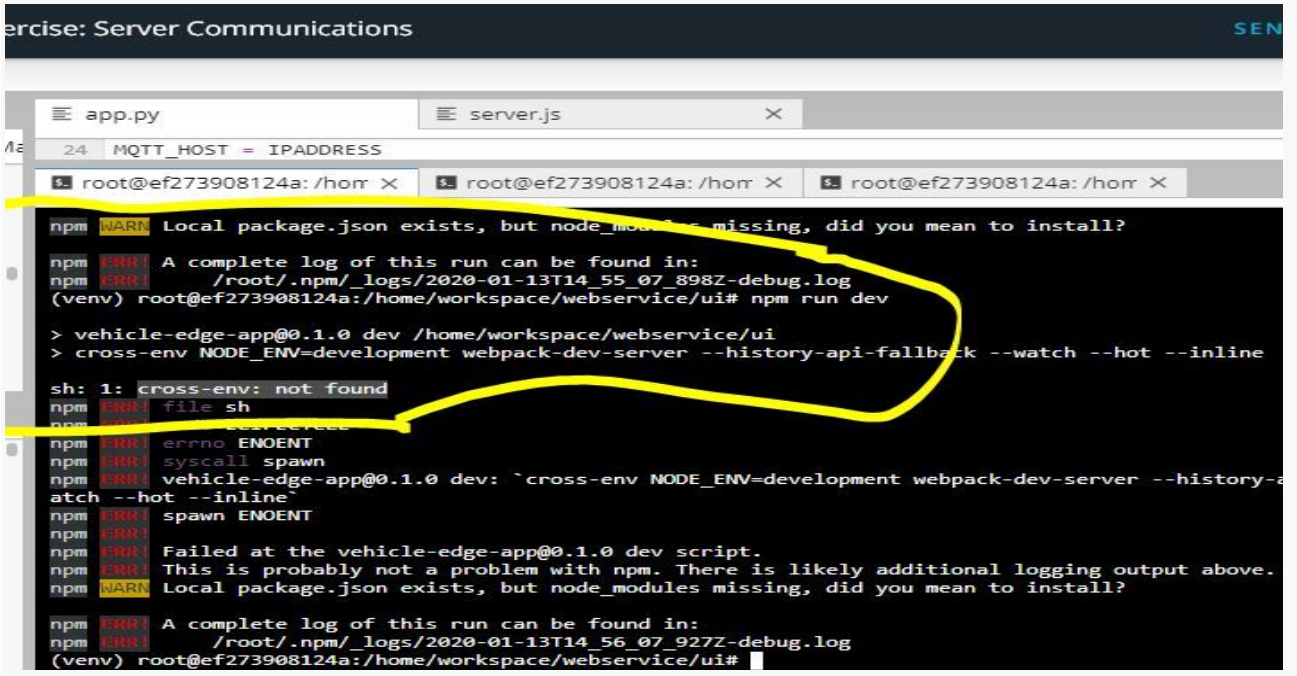
Ans:- You need to write down the stats that you want to publish.

this has to be done :-

client.publish("class", json.dumps({"class_names": class_names}))

client.publish("speedometer", json.dumps({"speed": speed}))

30. how to fix this?



Ans :- run npm install in webserver path. Do the same for webserver/ui.

Eg. cd webserver/ui

npm install

31. I am trying to show the frames in the cat & dog exercise on the screen like this:

Display the resulting frame

cv2.imshow('frame',p_frame)

I get an error:

Gtk-WARNING **: cannot open display

When I remove the code for displaying it everything works fine. Is this some error related to the Udacity workspace?

Ans: - You can't use this method in workspace, since it shows GUI windows using gtk library. As everybody said we can't, atleast directly. But You can utilize Jupiter notebook functionalities. First sourceenv.

Now,

In your workspace:

-go to> File>New>Notebook

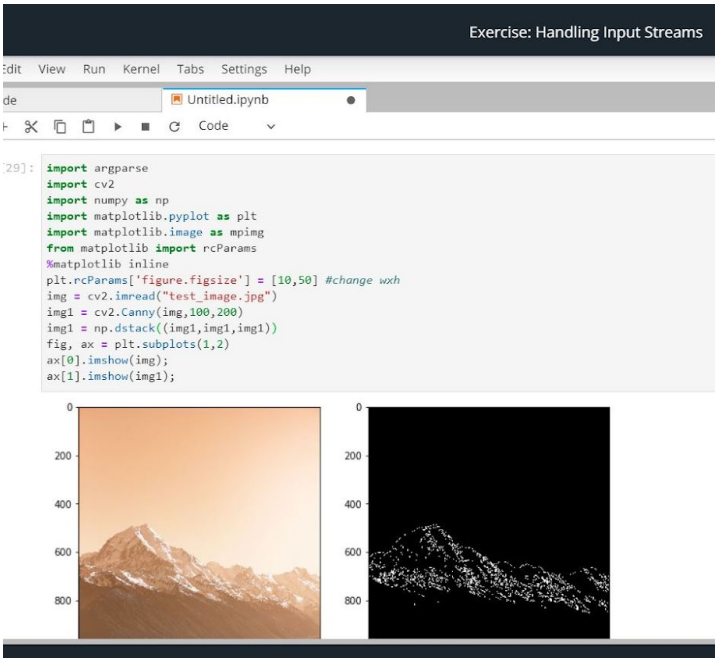
-select python3

-now use matplot library and do your research.

(without arguments, this is just for quick outputs to avoid frequent downloads/uploads)

Once you complete your research copy past code in app.py and perform args as per given task.

You can also play video with Ipython library.



NOTE :- first exercise "Handling Input Streams".

I observed that I thought

cap.isOpened() would handle the absence of next frame and automatically break the while loop but No. The ret, frame = cap.read() was needed here.

32. can anyone explain me the purpose and syntax of

`frame = np.dstack((frame, frame, frame))` ?

'cause even the instructor forgot it and as per the docs, it should be

Parameters: tup : sequence of arrays

The arrays must have the same shape along all but the third axis. 1-D or 2-D arrays must have the same shape.

Returns:stacked : ndarray

The array formed by stacking the given arrays, will be at least 3-D.

Any ideas why?

Ans:- `frame = np.dstack((frame, frame, frame))` is for converting a 1 channel image to a 3 channel image by stacking array in sequence depth wise, like a RGB image. However, when you use `cv2.`imwrite`('image_name.jpg', frame)` to save the frame as a jpg image, the image is saved as a 3 channel image. Hence, it does not matter if you stack or not the image. Try to read the output image by using and not using dstack and you will not find any difference.
When you convolved cv2.Canny filter on the image what you got was a 1channel grayscale image but to write output with opencv, you need to have a 3channel image, that is where np.dstack comes in, *frame = np.dstack((frame, frame, frame))* will take your one channel image and convert it to a 3 channel image by stacking the arrays on each other.

33. I am getting this error :-

(venv) root@6b6d9500d4f5:/home/workspace# python app.py -i blue-car.jpgTraceback (most recent call last):
File "app.py", line 74, in <module>
main()
File "app.py", line 70, in main
capture_stream(args)
File "app.py", line 26, in capture_stream
elif args.i.endswitch('.jpg') or args.i.endswitch('.bmp'):
AttributeError: 'str' object has no attribute 'endswitch'

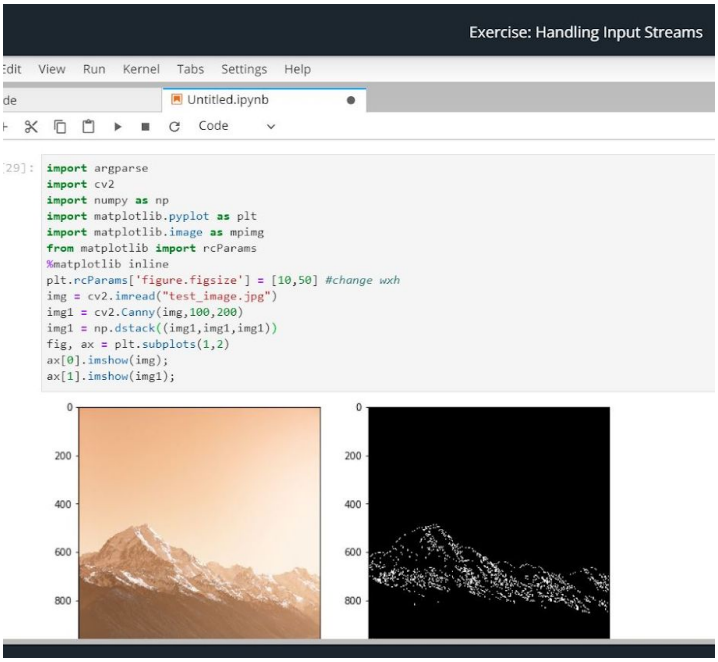
Ans:- There is a typo. Replace endswitch by endswith.
now these is another error
File "app.py", line 50, in capture_stream
frame = cv2.Canny(frame, (100, 200))
TypeError: Required argument 'threshold1' (pos 3) not found.
For this Replace by :frame = cv2.Canny(frame, 100, 200) that is remove ()

34. I am getting error in `Exercise: Server Communications` !! any fix ? error is `ModuleNotFoundError: No module named 'openvino'`

Ans:- try run this cmd

```
source /opt/intel/openvino/bin/setupvars.sh -pyver 3.5
```

NOTE:-
Tutorial for L5: How to show image in Udacity workspace:
If you want to learn opencv without local setup then you can follow this method.
We will Utilize Jupiter notebook functionalities.
1.First sourceenv.
2.In your workspace:
-go to> File>New>Notebook
-select python3
3.Now use matplot library and do your research.
(without arguments, this is just for quick outputs to avoid frequent downloads/uploads)
You can also play video with Ipython library.
4. Code: See Image below.



35. if result[0][1] == 1 and not incident_flag:

Can someone help to explain this line?

Ans :- the model produces outputs of shape (1,3) but i guess the second result is what we are concerned with when the output is 1 that means the cat and the dog2 are in together. also the not incident_flag is just to check the incident flag, the code started by setting it to False so if the output of result is one and (not Fasle == True) then execute the code that follow. Here for (1, 3), First of all it means the tensor is a 2dimensional tensor, also it has one row and 3 columns.

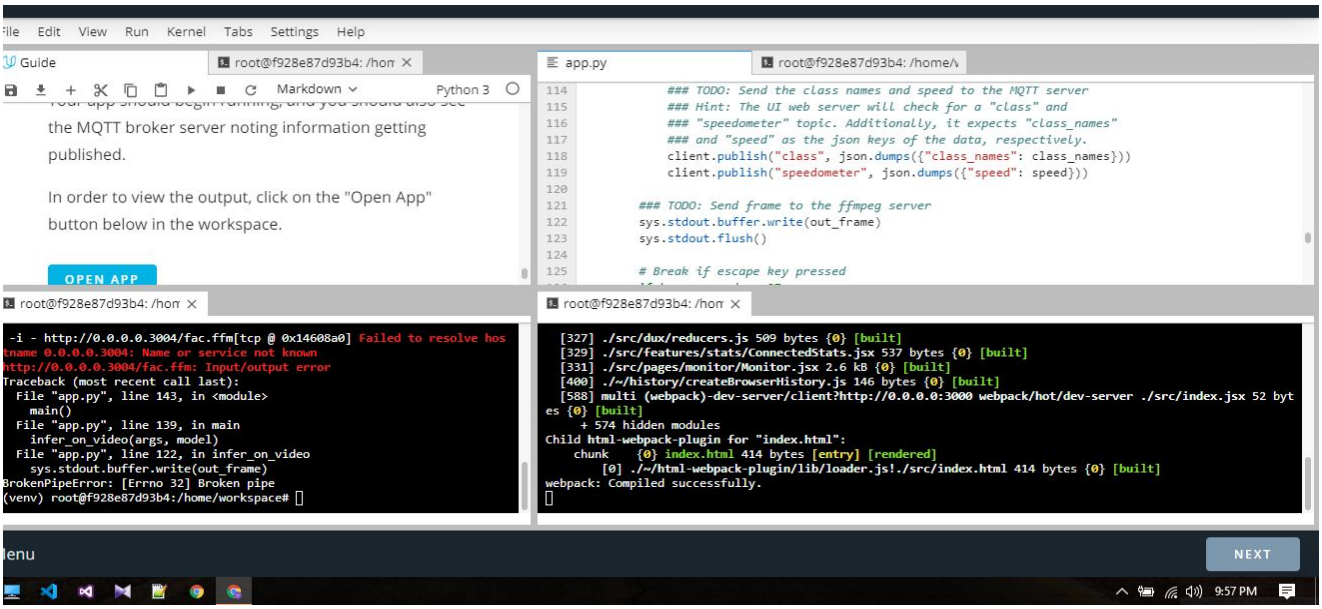
36. Hey guys on l5 exercise - 7 i'm getting incident at 0.00 seconds.. anyone know why?

Ans:- Make sure you increment the counter in your code .

37. Why might it still be useful to be streaming video back to another server, given AI applied at the edge?

Ans:- Let’s imagine a security camera: You don’t want to stream every single second that is captured to a server (because it would be expensive to do so). But if persons are detected within it (by the edge application) you might want to stream it to a server in case this person is trying to enter to your house, so you have footage to proof it later on.

38. Any hint for this error?



Ans :- Use 0.0.0.0:3004 instead of 0.0.0.0.3004

FAQs For Lesson - 4

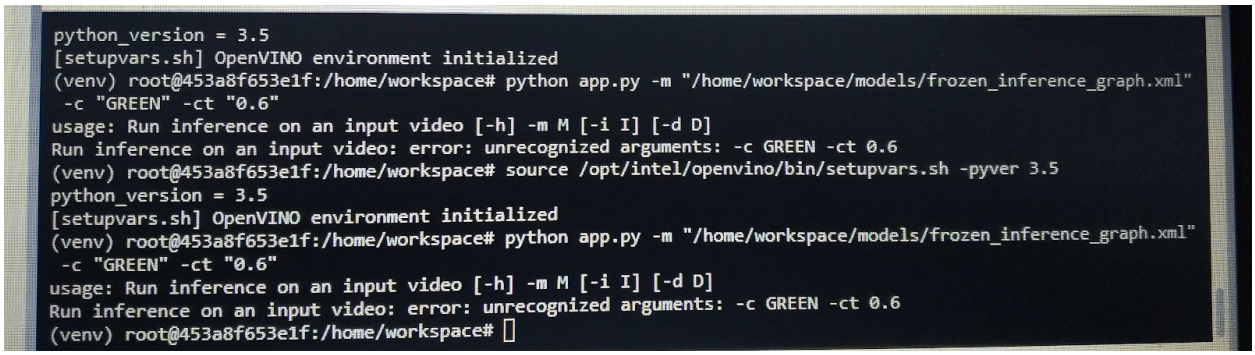
IMPORTANT NOTE:-

Don’t Forget to Click That Source Env Button (Blue Button) of the workspace

Most of the time, Error occurs because you have not pressed it !!

[If you have pressed it & still getting the error then move further to see other reasons for your error]

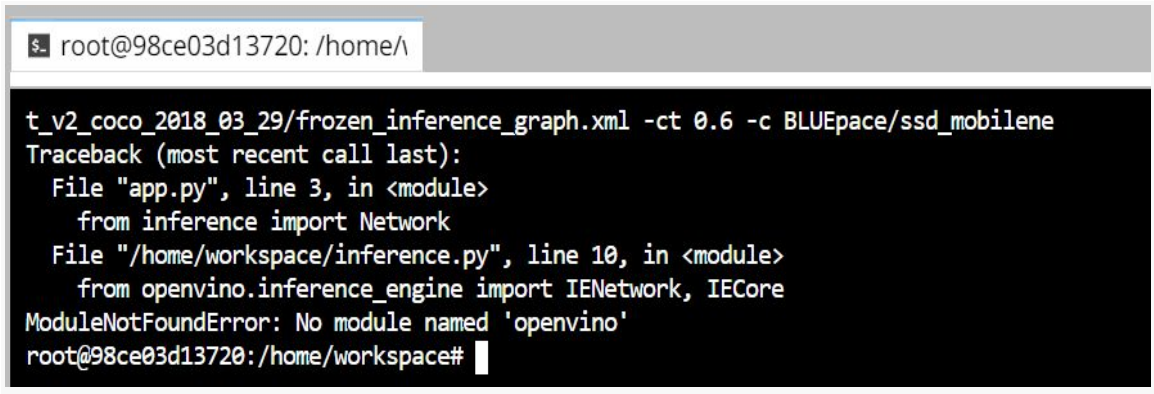
1.



Ans:-
Try to pass -ct and -c without double quote.
Eg. python app.py .... -ct 0.6 -c BLUE.

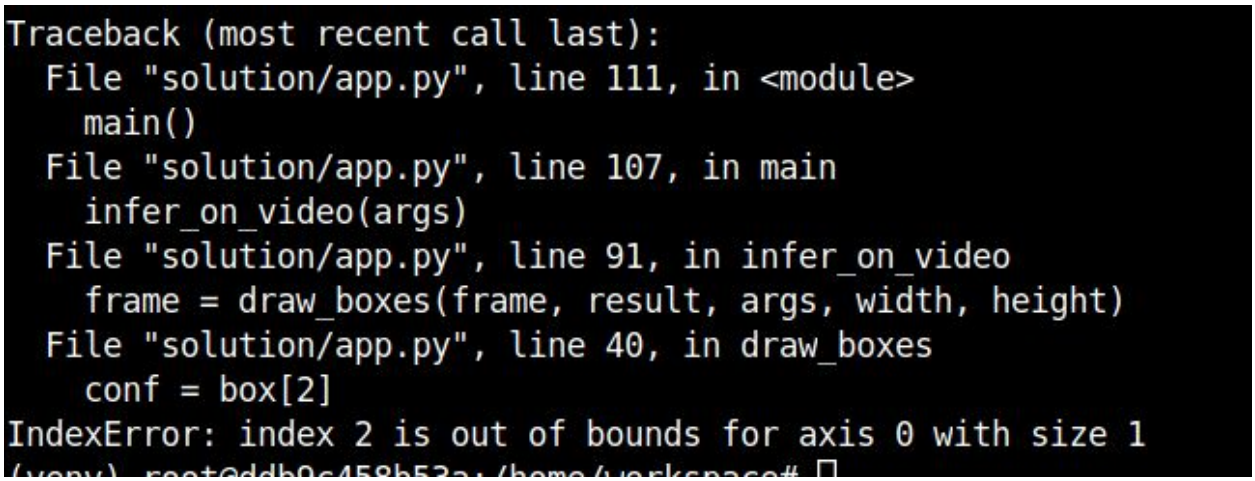
You need to put optional.add_argument for -c and -ct
Eg. optional.add_argument("-c",....

2. Does anyone get the below error?



Ans: click on the Source Env button upon loading the workspace

3.



Ans:- # Usage:

Download the correct model for vehicle detection

$ /opt/intel/openvino/deployment_tools/open_model_zoo/tools/downloader/downloader.py --name ssd_mobilenet_v2_coco

Convert tf model to IR

$ python /opt/intel/openvino/deployment_tools/model_optimizer/mo.py --input_model frozen_inference_graph.pb --tensorflow_object_detection_api_pipeline_config pipeline.config --reverse_input_channels --tensorflow_use_custom_operations_config

/opt/intel/openvino/deployment_tools/model_optimizer/extensions/front/tf/ssd_v2_support.json

Run inference and generate output.mp4

$ python solution/app.py -i test_video.mp4 -m /home/workspace/public/ssd_mobilenet_v2_coco/ssd_mobilenet_v2_coco_2018_03_29/frozen_inference_graph.xml

4. I understand that the method os.path.splitext(model_xml) splits the pathname (model_xml) into a pair. I need some clarification on what is contained in this path because my expectation is the .xml file

Ans : We are providing the XML path through -m argument. We also need to specify .bin file as network requires architecture (.xml) and weights (.bin) so it is splitting the .xml file into model_name.xml and model_name.bin

5. model_bin = os.path.splitext(model_xml)[0] + ".bin", what does this do?

ANS:-
It replaces the ".xml" extension in the model file name by ".bin". model_xml points to the model xml file, and now model_bin points to the model bin file.
[0] specifies the first part of the path. Everything before .XML is under [0].

```
1 print(os.path.splitext("/home/workspace/filename.xml"))
2 print(os.path.splitext("/home/workspace/filename.xml")[0])
3 print(os.path.splitext("/home/workspace/filename.xml")[0]+".bin")
```

```
('/home/workspace/filename', '.xml')
/home/workspace/filename
/home/workspace/filename.bin
```

6. Did not understand this one bit of it

```
unsupported_layers = [l for l in net.layers.keys() if l not in supported_layers]

  if len(unsupported_layers) != 0:

     print("Unsupported layers found: {}".format(unsupported_layers))

     print("Check whether extensions are available to add to IECore.")

     exit(1)
```

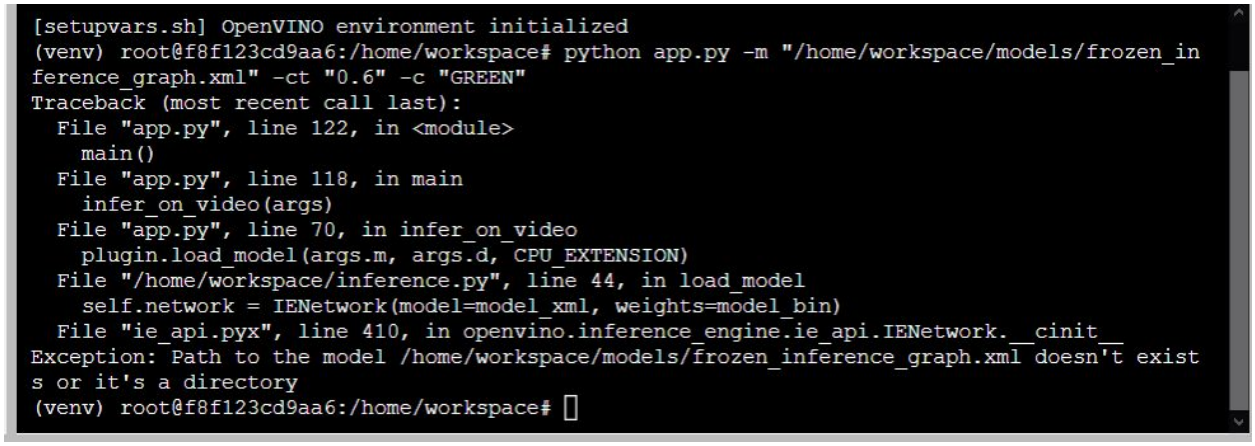
Ans :- Line 1 compares all layers of the model (net.layers.keys()) with the built in supported layers list. If any player is not in this list, it is appended to the unsupported layers list.

If there are any unsupported layers found, the if statement prints out the unsupported layers list we made above and exits the program.
The logic behind the first line:
unsupported_layers = [l for l in net.layers.keys() if l not in supported_layers]

can be described as:
for each item in net.layer.keys(), search if it exists in the supported_layers. If it does not exist in the supported_layers, then append it to the unsuppoprted_layers.
The next line:

```
  if len(unsupported_layers) != 0:
```

If there is at least one item in the unsupported_layers (if unsupported_layers is empty then the length will be zero), then there is at least one unsupported layer.



7.

Ans:-

follow these steps to download the frozen_inference_graph.xml : -

1. wget http://download.tensorflow.org/models/object_detection/ssd_mobilenet_v2_coco_2018_03_29.tar.gz
2. use tar -xvf command with the downloaded file to unpack it into the ssd_mobilenet_v2_coco_2018_03_29 folder

3. python /opt/intel/openvino/deployment_tools/model_optimizer/mo.py --input_model frozen_inference_graph.pb --tensorflow_object_detection_api_pipeline_config pipeline.config --reverse_input_channels --tensorflow_use_custom_operations_config /opt/intel/openvino/deployment_tools/model_optimizer/extensions/front/tf/ssd_v2_support.json

4. python app.py -m ssd_mobilenet_v2_coco_2018_03_29/frozen_inference_graph.xml -c BLUE -ct 0.6

8. What is this accessing exactly

status = exec_net.requests[0].wait(-1)

Input_blob = next(iter(exec_net.inputs) do ??

Ans :-
status = exec_net.requests[0].wait(-1) : we are just waiting for the previous async request to finish.
And input_blob = next(iter(exec_net.inputs)) is the name of the input layer. exec_net.inputs is a python dictionary that maps input layer names to InputInfo objects (from doc). The syntax next(iter(dic)) is particular to python. It returns a key of the dictionnary 'dic'. In the exercice, our model has only one input layer. So next(iter(exec_net.inputs)) return the name of that unique input layer.

-1 means that it is a blocking wait. The call does not return until the requests is finished.

If you use wait(0) instead, the call will immediately return even if the requests is not finished. And depending on the value of status, you will if it is finished or not.

9. python: can't open file 'test.py': [Errno 2] No such file or directory

(venv) root@5561fd69e212:~# ls
(venv) root@5561fd69e212:~# python test.py

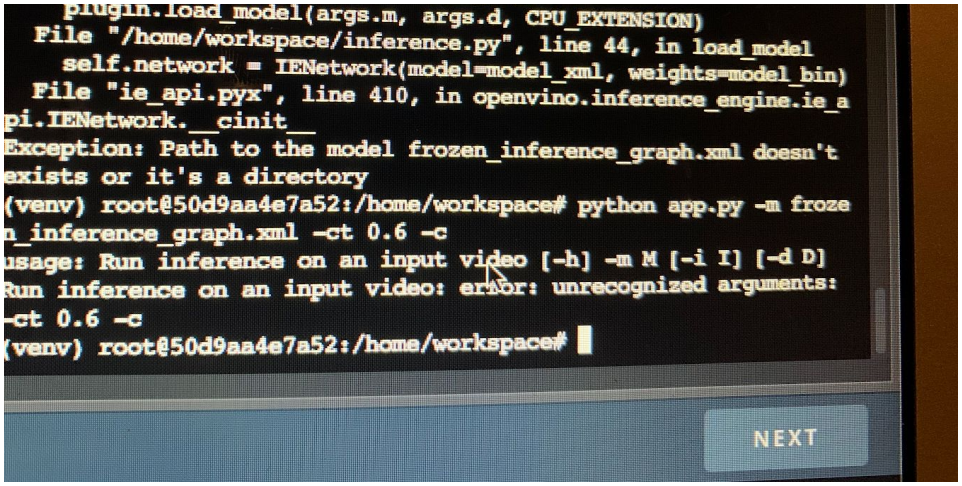
python: can't open file 'test.py': [Errno 2] No such file or directory

Ans :-
The error means it cannot find the file test.py in your current directory. Every time you run the command python you must be at the exact directory of the file to run python test.py, which in your case you were not at that directory /home/workspace or add the exact directory to the file in order to successfully run the python command such as python /home/workspace/test.py

10. IndexError: index 2 is out of bounds for axis 0 with size 1

Ans:-
create the
  args.c = convert_color(args.c)
  args.ct = float(args.ct) in the def infer_on_video(args)
And make this change from (0, 0, 255) to args.c, so you are getting the color you use in the command rather than a defaulting it to (0,0,255).
Use vehicle detection pre-trained models such as frozen_inference_graph.xml or vehicle-detection-adas-0002.xml rather than vehicle-attributes-recognition-barrier.0039.xml. I am not sure if the vehicle-attributes-recognition-barrier.0039.xml has the correct weights and bounds.

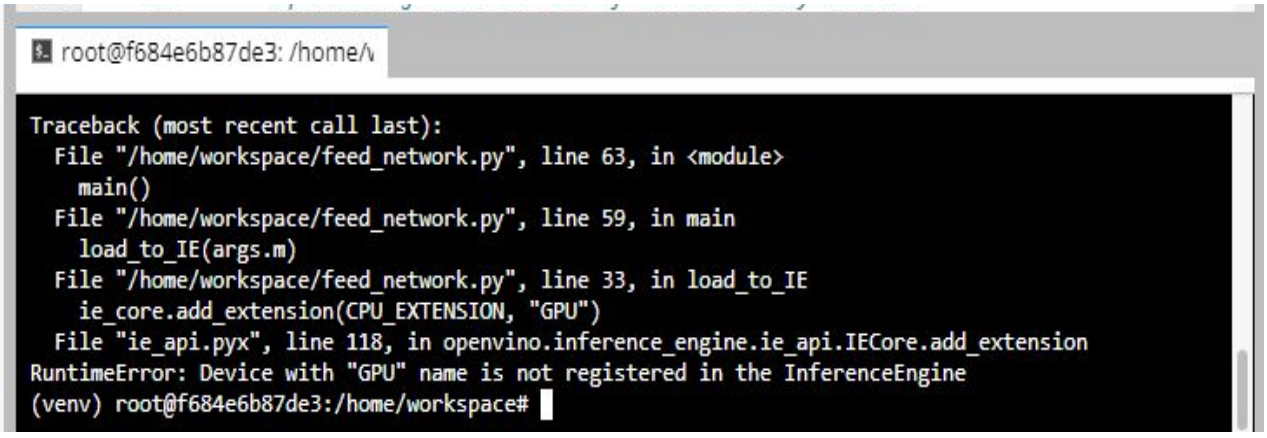
11.



Ans:-
The error means you haven't added the arguments ct and c in your python script. Add them and then try

add these lines : c_desc = "The color of the bounding boxes to draw; RED, GREEN or BLUE"
ct_desc = "The confidence threshold to use with the bounding boxes"

12.



Ans:-
I think you were initializing the IECore with model_xml and that was why it was failing

13. given the definition : `def sync_inference(exec_net, input_blob, image):` what's the difference between : input_blob and image as arguments although 'image' means the input image i'm not quite sure what 'input_blob' means and what it held on it ???!

Ans:-
input_blob is the name of the input layer of the model. It is the entry point of your model, it is just a string. Each layer in the model has a name. You may find also the output_blob (maybe in another exercice), which is the name of the ouput layer of your model.

14. In the async part In exercise 9 I didn't use the "while true" loop and the test passed, is it necessary? Maybe the task is too small so its finished quickly?

Ans:-
InferRequest.wait() will wait until result is ready

15. difference between the "async inference" and "batch inference"?

Ans: -
Async usage can improve overall frame-rate of the application, because rather than wait for inference to complete, the app can continue doing things on the host, while the accelerator is busy. The batch inference is the process of generating predictions on a batch of observations. The batch jobs are typically generated on some recurring schedule (e.g. hourly, daily). These predictions are then stored in a database and can be made available to developers or end-users. A batch inference may sometimes take advantage of big data technologies such as Spark to generate predictions. This allows data scientists and machine learning engineers to take advantage of scalable compute

resources to generate many predictions at once.

IMPORTANT [FREQUENTLY OCCURRING ERROR] :

EXCEPTION : Path to the model /home/workspace/models/frozen_inference_graph.xml doesn't exist or it's a directory

follow these steps to download the frozen_inference_graph.xml Just enter all the following commands one by one in cmd : -

1. wget http://download.tensorflow.org/models/object_detection/ssd_mobilenet_v2_coco_2018_03_29.tar.gz

2. use tar -xvf command with the downloaded file to unpack it into the ssd_mobilenet_v2_coco_2018_03_29 folder

3. python /opt/intel/openvino/deployment_tools/model_optimizer/mo.py --input_model frozen_inference_graph.pb --tensorflow_object_detection_api_pipeline_config pipeline.config --reverse_input_channels --tensorflow_use_custom_operations_config /opt/intel/openvino/deployment_tools/model_optimizer/extensions/front/tf/ssd_v2_support.json

4. python app.py -m ssd_mobilenet_v2_coco_2018_03_29/frozen_inference_graph.xml -c BLUE -ct 0.6