National College of Ireland

Configuration Manual

MSc Research Project
MSc in Data Analytics

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MSc Project Submission Sheet

School of Computing

Student Name:	Rishika Shetty		
Student ID:	X18182984		
Programme:	MSc in Data Analytics	**Year:**	2019-2020
Module:	MSc Research Project		
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Date: 17th August 2020

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Configuration Manual

Rishika Shetty
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1 Introduction

This configuration manual discusses about all the significant information including the tools, the software and hardware configurations, important snapshots of code and the prerequisites which is required to reproduce the work. Section 2 discusses in detail about the specifications required including Software Specification in Section 2.1 and Hardware Specifications in Section 2.2

2 Specifications

This research work has some software as well as hardware configuration requirements that are described further in the sections below.

2.1 Hardware Configurations

Following figure1 shows the hardware configurations that were used in this research work.

Hardware	Configurations
System	HP Pavilion x360 Convertible 14-dh0xxx
Operating System	Windows 10 (64-bit Operating system)
RAM	8GB
Hard Disk	265GB SSD
Graphic Card	Intel(R) UHD Graphics 620

Figure1: Shows Hardware Configurations

2.2 Software Configurations

Following figure2 shows the software configurations that were used in this research work.

Software	Configurations
Operating System	Windows 10 (64-bit Operating system)
IDE	Jupyter (Anaconda Navigator)
Scripting Language	Python
Scripting Language Version	Python 3.7
Additional Tools Used	ParseHub, LabelImg

Figure1: Shows Hardware Configurations

Below Figure3 below shows the Device and the Windows Specifications

Figure3: Device and Windows Specifications

2.2.1 ParseHub

ParseHub is a free web scrapping tool that is used in this research. Following are steps to download and use ParseHub (Parsehub, 2018)

Step 1. Downloading ParseHub

ParseHub can be downloaded from here .

Step 2. Click on Green New Project

Click on new project as shown below

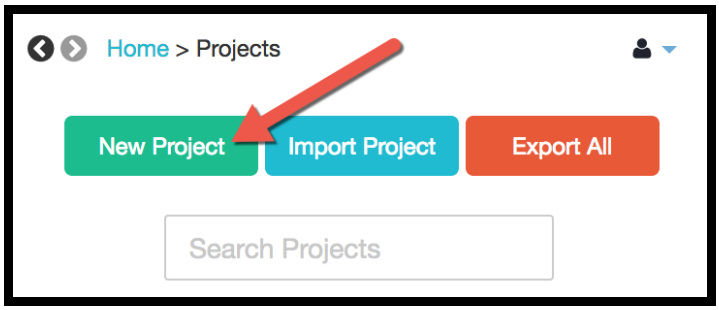

Figure 4: Click on new project snapshot

Enter the name of the site you want to perform web scrapping on. In this research the site name is:

Click on Start Project.

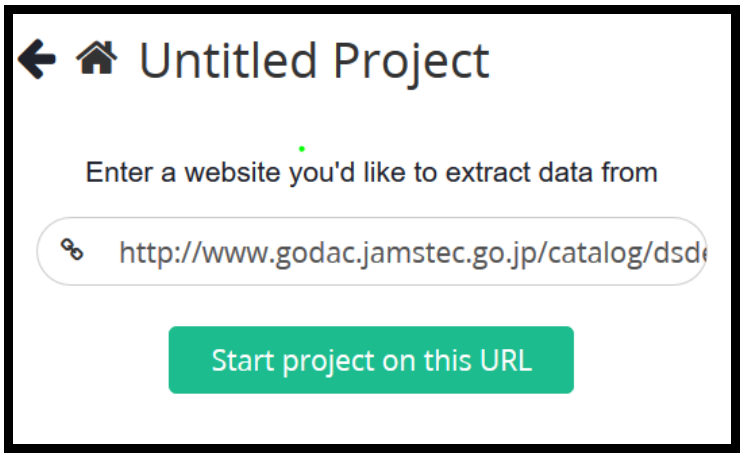

Figure 5: Enter site url snapshot

Step 3. Select to extract all that you want to scrap.

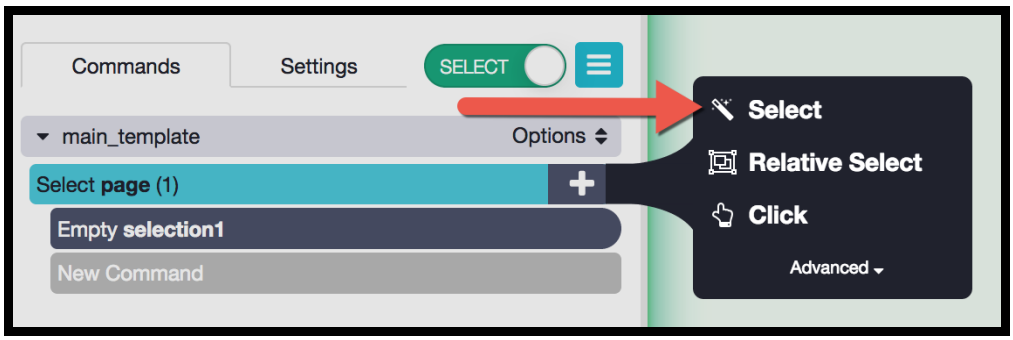

Figure 6: Select and Extract

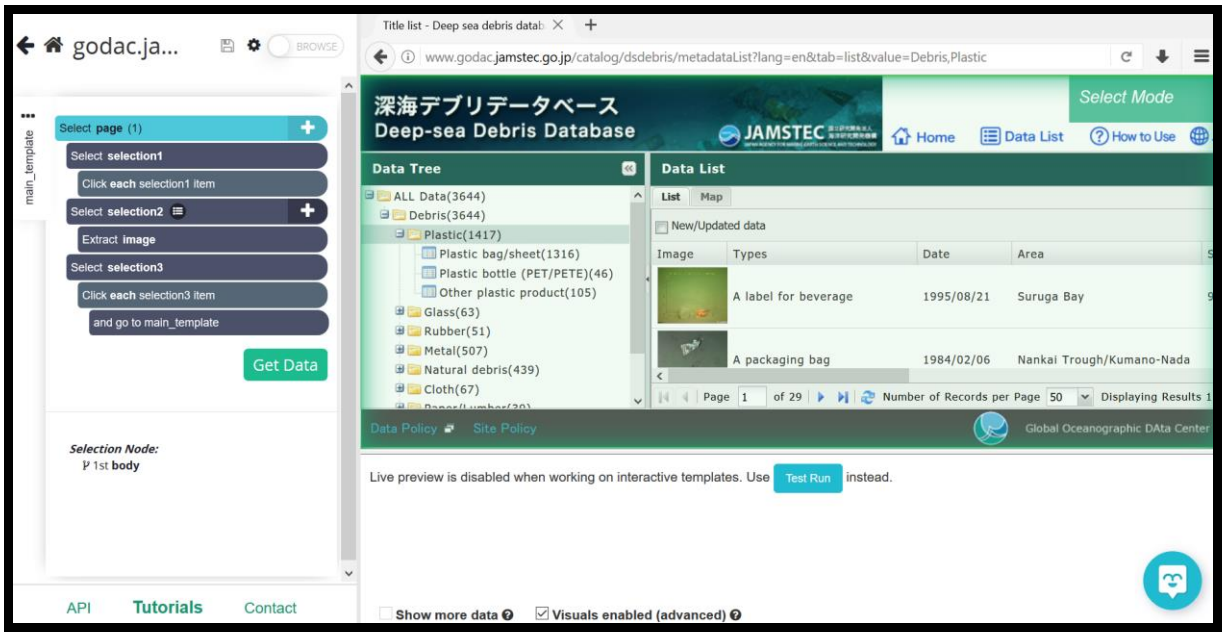

Figure 7: Snapshot after Selection

Step 4. Now run project

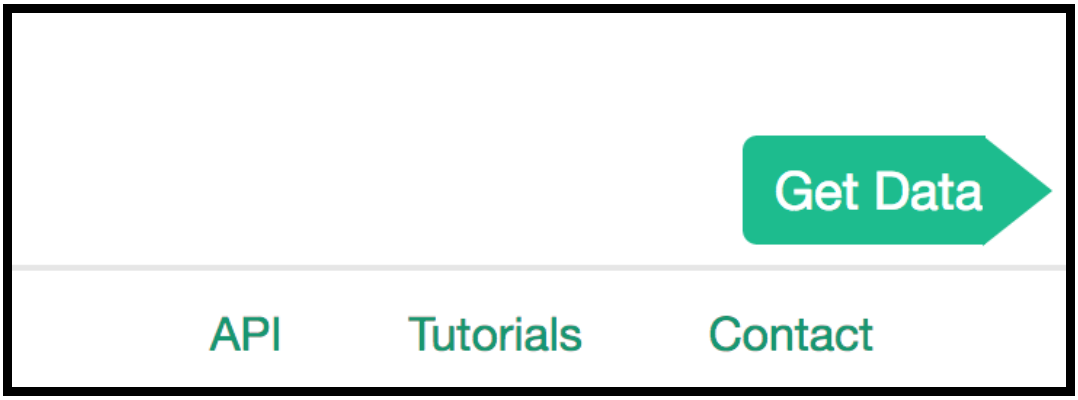

Figure 8: Snapshot to run project

2.2.2 LabelImg

LabelImg is used for annotations of images and also provides rectangular bounding boxes and labels. Following are the steps to download and use LabelImg

Step 1: Download LabelImg

You can download LabelImg from link :
https://www.dropbox.com/s/kqoxr10l3rkstqd/windows_v1.8.0.zip?dl=1
Once downloaded, when you open it you will see something like below in figure 9.

Figure 9: Snapshot of LabelImg

Step 2: Select Directory to open and save images

Click on Open Dir on left side and give the path to the images.

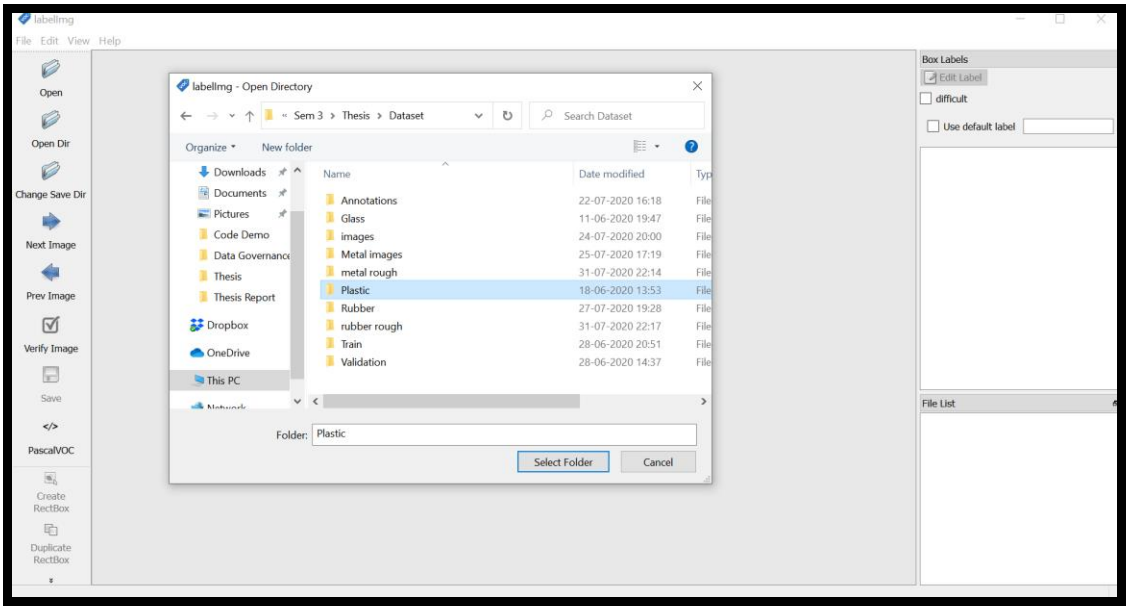

Figure 10: Snapshot of LabelImg Open Dir

Select Change Save Dir on the left side and give path to save the annotations.

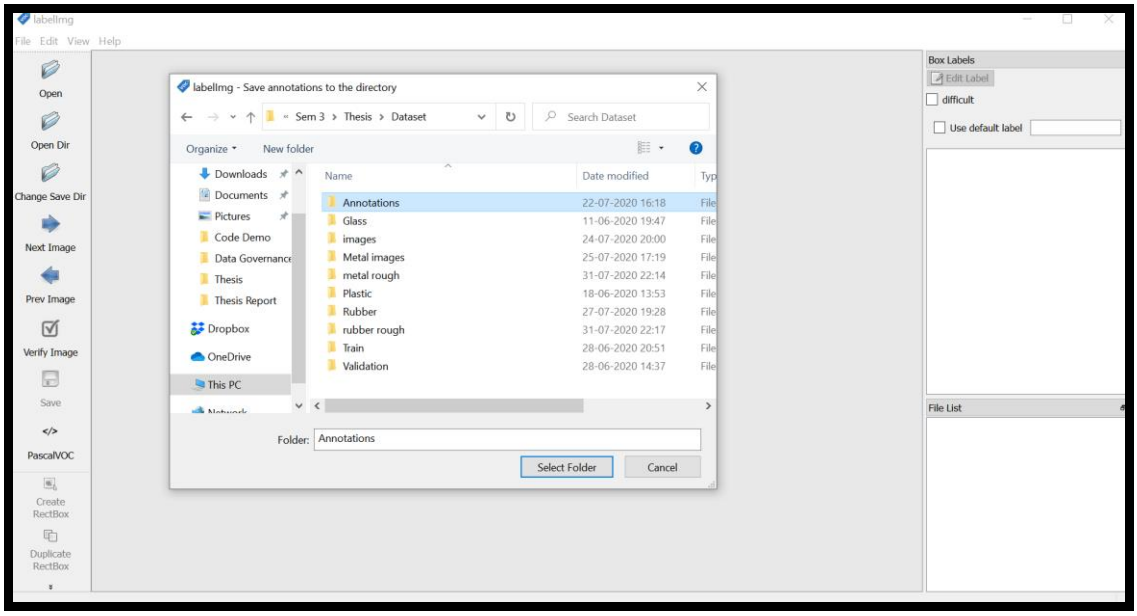

Figure 10: Snapshot of LabelImg Open Dir

Step 3: Draw Annotations

Once you click on the Open Dir and select the path of your images, all the images will be selected and will be shown on LabelImg Tool. Below figure 11 shows the same.

Figure 11: Snapshot of creating Annotations to the images

Step 4: Click on Save and Next Image.

Once you click on save the image will be saved at the location provided earlier. Then you click on next image and do the same for all the images.

2.2.3 Integrated Development Environment

Anaconda Navigator's Jupyter Notebook is used to implement this research and run the code. Anaconda Navigator is downloaded and below figure shows the snapshot of the same when you launch it.

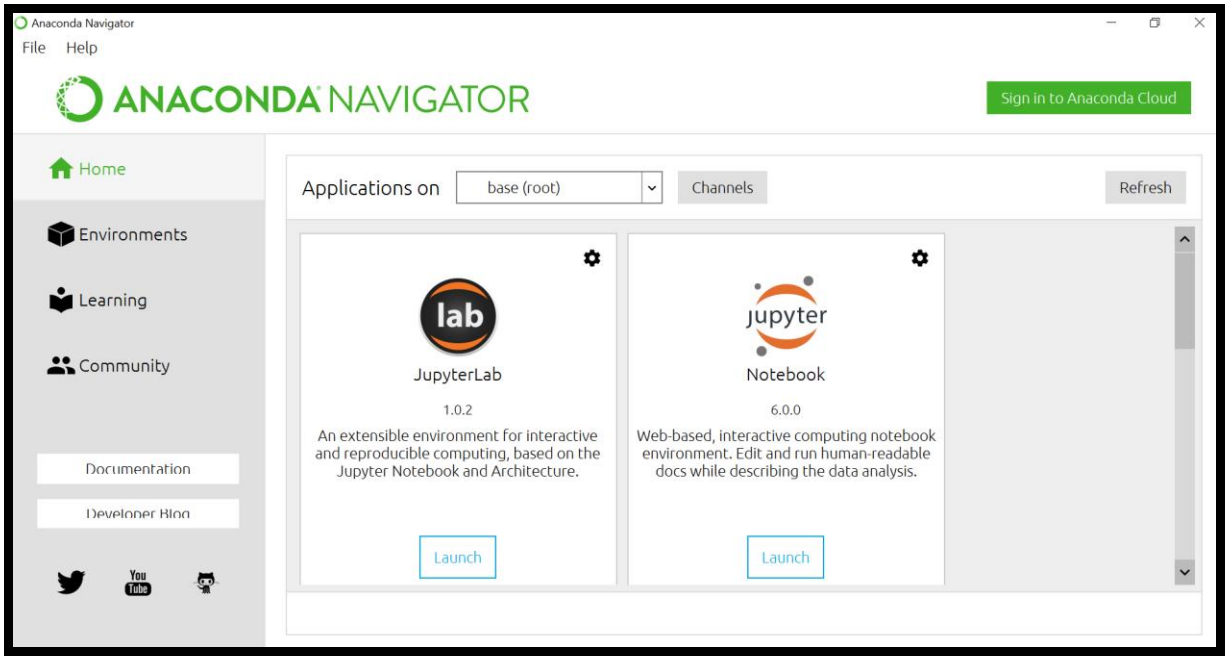

Figure 12: Snapshot of Anaconda Navigator

Once the Anaconda Navigator is launched, click on jupyter noterbook to launch it. Once jupyter notebook is launched, you will something as below in figure 5.

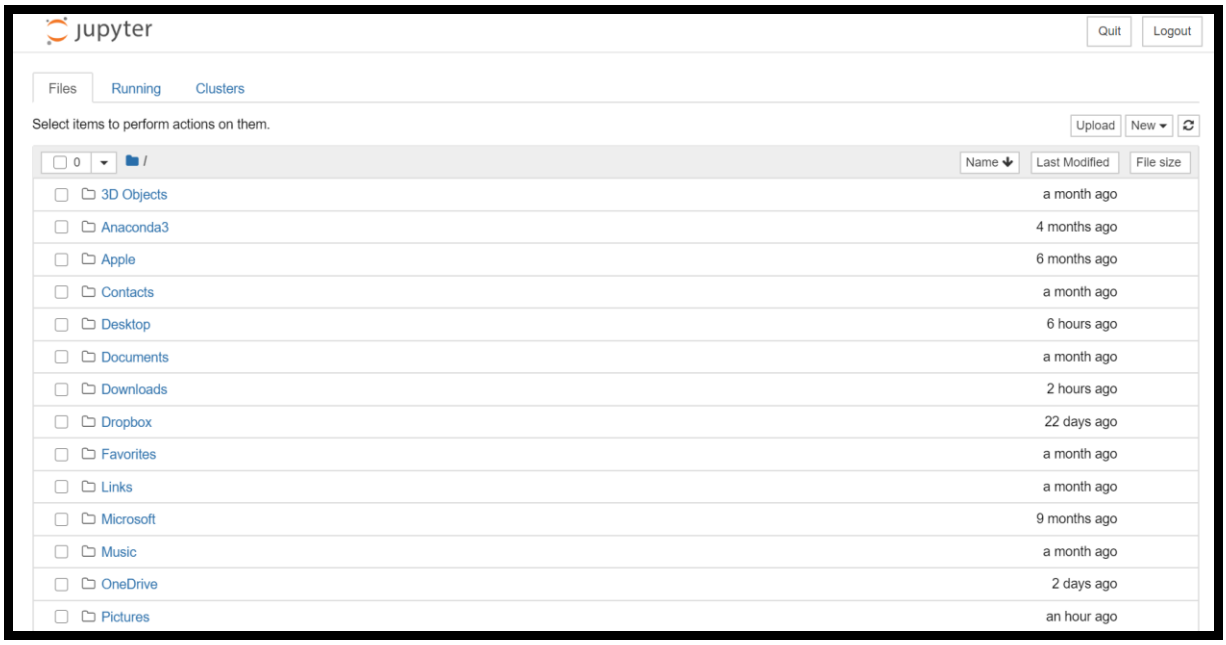

Figure 13: Shows snapshot of jupyter notebook when launched

Once jupyter notebook is launched, you can choose to open a new file by clicking on new button or choose to open an existing file from the path.

2.4 Libraries

Following are the list of libraries that are used in this research work.

cv2 – OpenCV
NumPy - Numerical Python
glob- return a path in a specified path
random- generating float value

Table 1: List of Libraries used

3. Training Datatset Using YOLOv3


Research.ipynb
File Edit View Insert Runtime Tools Help Last edited on 14 August
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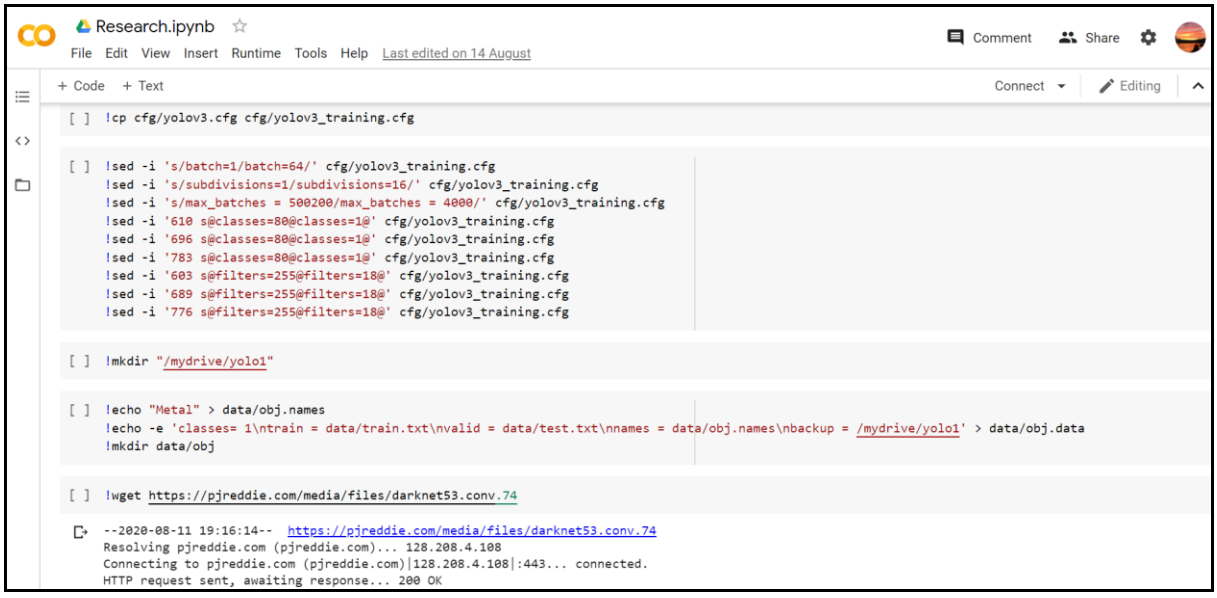
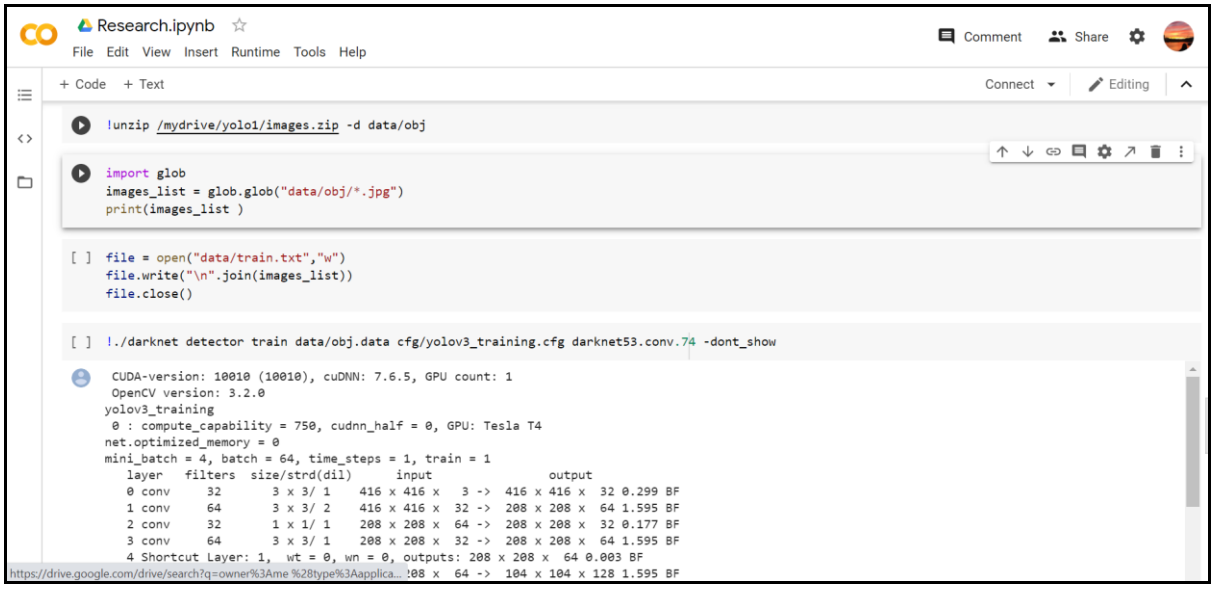
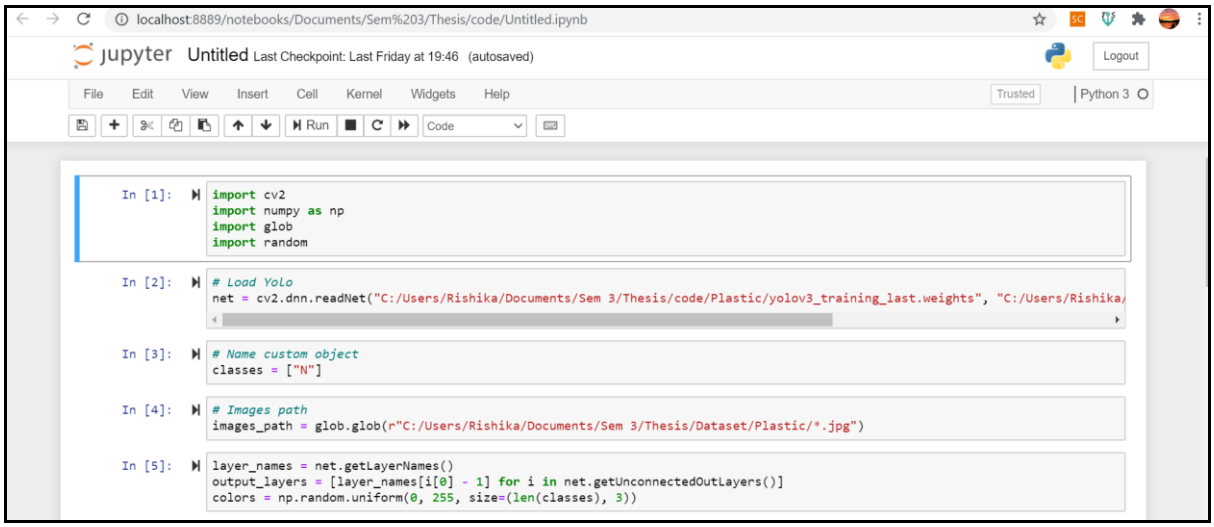
Connect Editing
[ ] %cd darknet
!sed -i 's/OPENCV=0/OPENCV=1/' Makefile
!sed -i 's/GPU=0/GPU=1/' Makefile
!sed -i 's/CUDNN=0/CUDNN=1/' Makefile
!make
/content/darknet
mkdir -p ./obj/
mkdir -p backup
chmod +x *.sh
g++ -std=c++11 -std=c++11 -Iinclude/ -I3rdparty/stb/include -DOPENCV `pkg-config --cflags opencv4 2> /dev/null || pkg-config --cflags opencv` -DGPU
./src/image_opencv.cpp: In function 'void draw_detections_cv_v3(void**, detection*, int, float, char**, image**, int, int)':
./src/image_opencv.cpp:926:23: warning: variable 'rgb' set but not used [-Wunused-but-set-variable]
float rgb[3];
^~~
./src/image_opencv.cpp: In function 'void draw_train_loss(char*, void**, int, float, float, int, int, float, int, char*, float, int, int, double)':
./src/image_opencv.cpp:1127:13: warning: this 'if' clause does not guard... [-Wmisleading-indentation]
if (iteration_old == 0)
^~
./src/image_opencv.cpp:1130:10: note: ...this statement, but the latter is misleadingly indented as if it were guarded by the 'if'
if (iteration_old != 0){
^~
./src/image_opencv.cpp: In function 'void cv_draw_object(image, float*, int, int, int*, float*, int*, int, char**)':
./src/image_opencv.cpp:1424:14: warning: unused variable 'buff' [-Wunused-variable]
char buff[100];
^~~~
./src/image_opencv.cpp:1400:9: warning: unused variable 'it_tb_res' [-Wunused-variable]


Research.ipynb
File Edit View Insert Runtime Tools Help Last edited on 14 August
Comment Share
+ Code + Text
Connect Editing
[ ] !cp cfg/yolov3.cfg cfg/yolov3_training.cfg
[ ] !sed -i 's/batch=1/batch=64/' cfg/yolov3_training.cfg
!sed -i 's/subdivisions=1/subdivisions=16/' cfg/yolov3_training.cfg
!sed -i 's/max_batches = 500200/max_batches = 4000/' cfg/yolov3_training.cfg
!sed -i '610 s@classes=80@classes=1@' cfg/yolov3_training.cfg
!sed -i '696 s@classes=80@classes=1@' cfg/yolov3_training.cfg
!sed -i '783 s@classes=80@classes=1@' cfg/yolov3_training.cfg
!sed -i '603 s@filters=255@filters=18@' cfg/yolov3_training.cfg
!sed -i '689 s@filters=255@filters=18@' cfg/yolov3_training.cfg
!sed -i '776 s@filters=255@filters=18@' cfg/yolov3_training.cfg
[ ] !mkdir "/mydrive/yolo1"
[ ] !echo "Metal" > data/obj.names
!echo -e 'classes= 1\ntrain = data/train.txt\nvalid = data/test.txt\nnames = data/obj.names\nbackup = /mydrive/yolo1' > data/obj.data
!mkdir data/obj
[ ] !wget https://pjreddie.com/media/files/darknet53.conv.74
--2020-08-11 19:16:14-- https://pjreddie.com/media/files/darknet53.conv.74
Resolving pjreddie.com (pjreddie.com)... 128.208.4.108
Connecting to pjreddie.com (pjreddie.com)|128.208.4.108|:443... connected.
HTTP request sent, awaiting response... 200 OK


Research.ipynb
File Edit View Insert Runtime Tools Help
Comment Share
+ Code + Text
Connect Editing
!unzip /mydrive/yolo1/images.zip -d data/obj
import glob
images_list = glob.glob("data/obj/*.jpg")
print(images_list)
[ ] file = open("data/train.txt","w")
file.write("\n".join(images_list))
file.close()
[ ] !./darknet detector train data/obj.data cfg/yolov3_training.cfg darknet53.conv.74 -dont_show
CUDA-version: 10010 (10010), cuDNN: 7.6.5, GPU count: 1
OpenCV version: 3.2.0
yolov3_training
0 : compute_capability = 750, cudnn_half = 0, GPU: Tesla T4
net.optimized_memory = 0
mini_batch = 4, batch = 64, time_steps = 1, train = 1
layer filters size/strd(dil) input output
0 conv 32 3 x 3/ 1 416 x 416 x 3 -> 416 x 416 x 32 0.299 BF
1 conv 64 3 x 3/ 2 416 x 416 x 32 -> 208 x 208 x 64 1.595 BF
2 conv 32 1 x 1/ 1 208 x 208 x 64 -> 208 x 208 x 32 0.177 BF
3 conv 64 3 x 3/ 1 208 x 208 x 32 -> 208 x 208 x 64 1.595 BF
4 Shortcut Layer: 1, wt = 0, wn = 0, outputs: 208 x 208 x 64 0.003 BF
https://drive.google.com/drive/search?q=owner%3Ame %28type%3Aapplica... 208 x 64 -> 104 x 104 x 128 1.595 BF

4. Object Detection



5. References

Parsehub. (2018). *Parsehub*. Retrieved from Parsehub: https://help.parsehub.com/hc/en-us/articles/218181287-EXAMPLE-Create-your-first-ParseHub-project