▾ YOLO_V3 en Tensor Flow y Darnket usando COCO Dataset

Alberto Gonzalez Isorna

▾ [A] -- DARKNET --

▾ Instalacion de compiladores, darknet, tensorflow

```
# nos vamos a Darknet y copiamos el codigo -> Clone
!git clone --quiet https://github.com/AlexeyAB/darknet

# actualizamos por si hay cambios
!apt-get -q update
!apt-get -q upgrade

#build-essential is a metapackage (a package that installs many other packages, like g++ a
!apt-get -q install build-essential
!apt-get -q install cmake git libgtk2.0-dev pkg-config libavcodec-dev libavformat-dev libs
!apt-get -q install libavcodec-dev libavformat-dev libswscale-d
!apt-get -q install libopencv-dev

%cd darknet
# sed es para cambiar partes de un fichero
!ls
!sed -i 's/OPENCV=0/OPENCV=1/g' Makefile
!sed -i 's/GPU=0/GPU=1/g' Makefile

!ls
%cd ../
!ls

!apt -q install g++-5
!apt -q install gcc-5

!apt -q update
!apt -q upgrade

# importamos tensorflow
import tensorflow as tf
device_name = tf.test.gpu_device_name()
print(device_name)

print("'sup!'")

!/usr/local/cuda/bin/nvcc --version
```

```
%cd darknet
!wget https://pjreddie.com/media/files/yolov3.weights
!make
```

⤷

```
 extern __host__ cudaError_t CUDARTAPI cudaHostAlloc(void **pHost, size_t size, unsi
                         ^~~~~~~~~~~~~
./src/gaussian_yolo_layer.c: In function 'forward_gaussian_yolo_layer':
./src/gaussian_yolo_layer.c:414:25: warning: variable 'best_match_t' set but not used
              int best_match_t = 0;
                      ^~~~~~~~~~~~
gcc -Iinclude/ -I3rdparty/stb/include -DOPENCV `pkg-config --cflags opencv` -DGPU -I/
gcc -Iinclude/ -I3rdparty/stb/include -DOPENCV `pkg-config --cflags opencv` -DGPU -I/
gcc -Iinclude/ -I3rdparty/stb/include -DOPENCV `pkg-config --cflags opencv` -DGPU -I/
gcc -Iinclude/ -I3rdparty/stb/include -DOPENCV `pkg-config --cflags opencv` -DGPU -I/
gcc -Iinclude/ -I3rdparty/stb/include -DOPENCV `pkg-config --cflags opencv` -DGPU -I/
nvcc -gencode arch=compute_30,code=sm_30 -gencode arch=compute_35,code=sm_35 -gencode
nvcc -gencode arch=compute_30,code=sm_30 -gencode arch=compute_35,code=sm_35 -gencode
nvcc -gencode arch=compute_30,code=sm_30 -gencode arch=compute_35,code=sm_35 -gencode
./src/im2col_kernels.cu:125:18: warning: "/*" within comment [-Wcomment]
              //*data_col_ptr = (h >= 0 && w >= 0 && h < height && w < width) ?

./src/im2col_kernels.cu:1178:6: warning: "/*" within comment [-Wcomment]
        //*((uint64_t *)(A_s + (local_i*lda + k) / 8)) = *((uint64_t *)(A + (i_cur*lda +

./src/im2col_kernels.cu:125:18: warning: "/*" within comment [-Wcomment]
              //*data_col_ptr = (h >= 0 && w >= 0 && h < height && w < width) ?

./src/im2col_kernels.cu:1178:6: warning: "/*" within comment [-Wcomment]
        //*((uint64_t *)(A_s + (local_i*lda + k) / 8)) = *((uint64_t *)(A + (i_cur*lda +

./src/im2col_kernels.cu:125:18: warning: "/*" within comment [-Wcomment]
              //*data_col_ptr = (h >= 0 && w >= 0 && h < height && w < width) ?

./src/im2col_kernels.cu:1178:6: warning: "/*" within comment [-Wcomment]
        //*((uint64_t *)(A_s + (local_i*lda + k) / 8)) = *((uint64_t *)(A + (i_cur*lda +

./src/im2col_kernels.cu:125:18: warning: "/*" within comment [-Wcomment]
              //*data_col_ptr = (h >= 0 && w >= 0 && h < height && w < width) ?

./src/im2col_kernels.cu:1178:6: warning: "/*" within comment [-Wcomment]
        //*((uint64_t *)(A_s + (local_i*lda + k) / 8)) = *((uint64_t *)(A + (i_cur*lda +

./src/im2col_kernels.cu:125:18: warning: "/*" within comment [-Wcomment]
              //*data_col_ptr = (h >= 0 && w >= 0 && h < height && w < width) ?

./src/im2col_kernels.cu:1178:6: warning: "/*" within comment [-Wcomment]
        //*((uint64_t *)(A_s + (local_i*lda + k) / 8)) = *((uint64_t *)(A + (i_cur*lda +

./src/im2col_kernels.cu:125:18: warning: "/*" within comment [-Wcomment]
              //*data_col_ptr = (h >= 0 && w >= 0 && h < height && w < width) ?

./src/im2col_kernels.cu:1178:6: warning: "/*" within comment [-Wcomment]
        //*((uint64_t *)(A_s + (local_i*lda + k) / 8)) = *((uint64_t *)(A + (i_cur*lda +

nvcc -gencode arch=compute_30,code=sm_30 -gencode arch=compute_35,code=sm_35 -gencode
nvcc -gencode arch=compute_30,code=sm_30 -gencode arch=compute_35,code=sm_35 -gencode
nvcc -gencode arch=compute_30,code=sm_30 -gencode arch=compute_35,code=sm_35 -gencode
nvcc -gencode arch=compute_30,code=sm_30 -gencode arch=compute_35,code=sm_35 -gencode
nvcc -gencode arch=compute_30,CUDAE=sm_30 cudegencode arch=compute_35,code=sm_35 -gencode
nvcc -gencode arch=compute_30,code=sm_30 -gencode arch=compute_35,code=sm_35 -gencode
nvcc -gencode arch=compute_30,code=sm_30 -gencode arch=compute_35,code=sm_35 -gencode
g++ -std=c++11 -Iinclude/ -I3rdparty/stb/include -DOPENCV `pkg-config --cflags opencv
```

def imsave():

▾ Imagenes de ejemplo

def imsave():

```
def imsave():
    import cv2
    image = cv2.imread('predictions.jpg')
    return image

def imshow2(im):
    import cv2
    import matplotlib.pyplot as plt
    %matplotlib inline

    image = im
    height, width = image.shape[:2]
    resized_image = cv2.resize(image,(3*width, 3*height), interpolation = cv2.INTER_CUBIC)

    fig = plt.gcf()
    fig.set_size_inches(18, 10)
    plt.axis("off")
    #plt.rcParams['figure.figsize'] = [10, 5]
    plt.imshow(cv2.cvtColor(resized_image, cv2.COLOR_BGR2RGB))
    plt.show()


!./darknet detect cfg/yolov3.cfg yolov3.weights data/dog.jpg
im1 = imsave()
imshow2(im1)
```

☐→

```
[yolo] params: iou loss: mse (2), iou_norm: 0.75, cls_norm: 1.00, scale_x_y: 1.00
  95 route  91                                    ->   26 x  26 x 256
  96 conv    128       1 x 1/ 1    26 x  26 x 256 ->   26 x  26 x 128 0.044 BF
  97 upsample          2x    26 x  26 x 128 ->   52 x  52 x 128
  98 route  97 36                                 ->   52 x  52 x 384
  99 conv    128       1 x 1/ 1    52 x  52 x 384 ->   52 x  52 x 128 0.266 BF
 100 conv    256       3 x 3/ 1    52 x  52 x 128 ->   52 x  52 x 256 1.595 BF
 101 conv    128       1 x 1/ 1    52 x  52 x 256 ->   52 x  52 x 128 0.177 BF
 102 conv    256       3 x 3/ 1    52 x  52 x 128 ->   52 x  52 x 256 1.595 BF
 103 conv    128       1 x 1/ 1    52 x  52 x 256 ->   52 x  52 x 128 0.177 BF
 104 conv    256       3 x 3/ 1    52 x  52 x 128 ->   52 x  52 x 256 1.595 BF
 105 conv    255       1 x 1/ 1    52 x  52 x 256 ->   52 x  52 x 255 0.353 BF
 106 yolo
[yolo] params: iou loss: mse (2), iou_norm: 0.75, cls_norm: 1.00, scale_x_y: 1.00
Total BFLOPS 65.864
 Allocate additional workspace_size = 49.84 MB
Loading weights from yolov3.weights...
 seen 64
Done! Loaded 107 layers from weights-file
data/dog.jpg: Predicted in 675.123000 milli-seconds.
bicycle: 99%
dog: 100%
truck: 94%
Unable to init server: Could not connect: Connection refused

(predictions:15392): Gtk-WARNING **: 22:47:33.177: cannot open display:
```
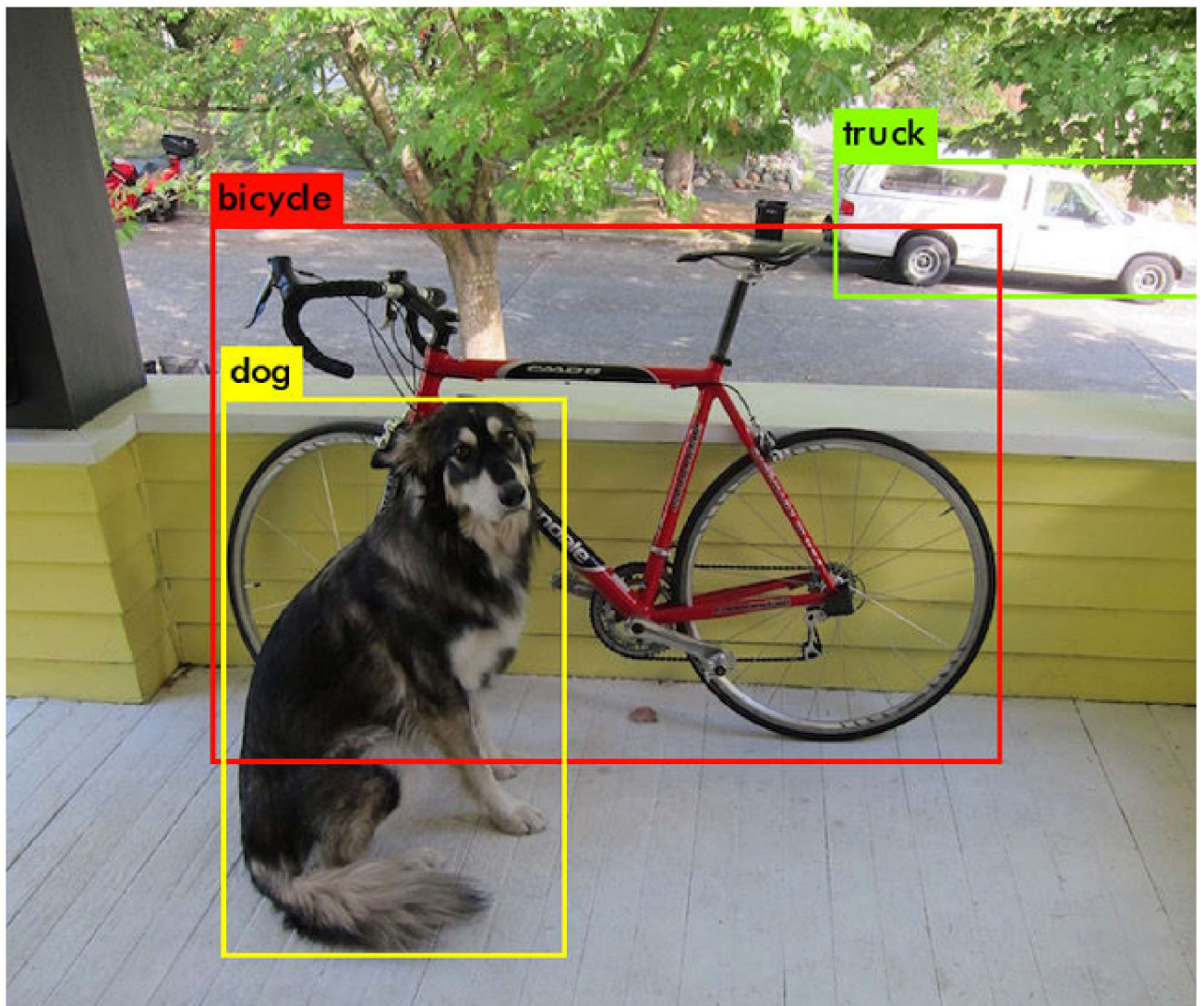
Haz doble clic (o pulsa Intro) para editar

▾ [0] - Cargamos los datasets

```
%%shell
cp scripts/get_coco_dataset.sh data
cd data
bash get_coco_dataset.sh
```

⤷

```
2019-12-12 22:52:52 (40.9 MB/s) - 'train2014.zip' saved [13510573713/13510573713]


--2019-12-12 22:52:52--  http://images.cocodataset.org/zips/val2014.zip
Resolving images.cocodataset.org (images.cocodataset.org)... 52.217.32.52
Connecting to images.cocodataset.org (images.cocodataset.org)|52.217.32.52|:80... cor
HTTP request sent, awaiting response... 200 OK
Length: 6645013297 (6.2G) [application/zip]
Saving to: 'val2014.zip'


val2014.zip          100%[===================>]   6.19G  47.9MB/s    in 2m 23s


2019-12-12 22:55:16 (44.2 MB/s) - 'val2014.zip' saved [6645013297/6645013297]


--2019-12-12 22:58:11--  https://pjreddie.com/media/files/instances_train-val2014.zip
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
Length: 165168220 (158M) [application/zip]
Saving to: 'instances_train-val2014.zip'


instances_train-val 100%[===================>] 157.52M  75.5MB/s    in 2.1s


2019-12-12 22:58:14 (75.5 MB/s) - 'instances_train-val2014.zip' saved [165168220/1651


--2019-12-12 22:58:14--  https://pjreddie.com/media/files/coco/5k.part
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
Length: 230000 (225K) [application/octet-stream]
Saving to: '5k.part'


5k.part              100%[===================>] 224.61K  --.-KB/s    in 0.1s


2019-12-12 22:58:14 (2.23 MB/s) - '5k.part' saved [230000/230000]


--2019-12-12 22:58:14--  https://pjreddie.com/media/files/coco/trainvalno5k.part
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
Length: 5722468 (5.5M) [application/octet-stream]
Saving to: 'trainvalno5k.part'


trainvalno5k.part    100%[===================>]   5.46M  21.4MB/s    in 0.3s


2019-12-12 22:58:15 (21.4 MB/s) - 'trainvalno5k.part' saved [5722468/5722468]


--2019-12-12 22:58:15--  https://pjreddie.com/media/files/coco/labels.tgz
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
Length: 17940023 (17M) [application/octet-stream]
Saving to: 'labels.tgz'


labels.tgz           100%[===================>]  17.11M  43.0MB/s    in 0.4s


2019-12-12 22:58:15 (43.0 MB/s) - 'labels.tgz' saved [17940023/17940023]
```