Detección_Objetos

June 2, 2021

```
[]: # Montar sistema de archivos
     from google.colab import drive
     drive.mount('/content/drive')
     %load ext autoreload
     %autoreload 2
    Mounted at /content/drive
[]: # Movernos a la carpeta
     import os
     #os.chdir("drive/My Drive/Colab Notebooks/Colab Notebooks/IOT/Practica 11/")
    Detección_Objetos.ipynb img
[]: # Instalar API de TensorFlow
     #!qit clone https://qithub.com/pjreddie/darknet.qit
     #os.chdir("darknet")
     !make
     !nvcc --version
     !nvidia-smi
     os.getcwd()
    mkdir -p obj
    mkdir -p backup
    mkdir -p results
    gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
    result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c ./src/gemm.c
    -o obj/gemm.o
    gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
    result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
    ./src/utils.c -o obj/utils.o
    gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
    result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c ./src/cuda.c
    -o obj/cuda.o
    gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
    result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
    ./src/deconvolutional_layer.c -o obj/deconvolutional_layer.o
```

```
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config -- cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/convolutional_layer.c -o obj/convolutional_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c ./src/list.c
-o obj/list.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config -- cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/image.c -o obj/image.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/activations.c -o obj/activations.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/im2col.c -o obj/im2col.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/col2im.c -o obj/col2im.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c ./src/blas.c
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/crop_layer.c -o obj/crop_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/dropout_layer.c -o obj/dropout_layer.o
gcc -Iinclude/ -Isrc/ -DOPENCV `pkg-config --cflags opencv` -Wall -Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/maxpool_layer.c -o obj/maxpool_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
\verb|result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c| \\
./src/softmax_layer.c -o obj/softmax_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c ./src/data.c
-o obj/data.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config -- cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/matrix.c -o obj/matrix.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/network.c -o obj/network.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/connected_layer.c -o obj/connected_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/cost_layer.c -o obj/cost_layer.o
```

```
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/parser.c -o obj/parser.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/option_list.c -o obj/option_list.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config -- cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/detection_layer.c -o obj/detection_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/route_layer.c -o obj/route_layer.o
gcc -Iinclude/ -Isrc/ -DOPENCV `pkg-config --cflags opencv` -Wall -Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/upsample_layer.c -o obj/upsample_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c ./src/box.c
-o obj/box.o
gcc -Iinclude/ -Isrc/ -DOPENCV `pkg-config --cflags opencv` -Wall -Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/normalization_layer.c -o obj/normalization_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/avgpool_layer.c -o obj/avgpool_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/layer.c -o obj/layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/local_layer.c -o obj/local_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/shortcut_layer.c -o obj/shortcut_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/logistic_layer.c -o obj/logistic_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config -- cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/activation_layer.c -o obj/activation_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/rnn_layer.c -o obj/rnn_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/gru_layer.c -o obj/gru_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/crnn_layer.c -o obj/crnn_layer.o
```

```
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c ./src/demo.c
-o obj/demo.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/batchnorm_layer.c -o obj/batchnorm_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config -- cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/region_layer.c -o obj/region_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/reorg_layer.c -o obj/reorg_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c ./src/tree.c
-o obj/tree.o
gcc -Iinclude/ -Isrc/ -DOPENCV `pkg-config --cflags opencv` -Wall -Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/lstm_layer.c -o obj/lstm_layer.o
gcc -Iinclude/ -Isrc/ -DOPENCV `pkg-config --cflags opencv` -Wall -Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/l2norm layer.c -o obj/l2norm layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/yolo_layer.c -o obj/yolo_layer.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/iseg_layer.c -o obj/iseg_layer.o
g++ -Iinclude/ -Isrc/ -DOPENCV `pkg-config --cflags opencv` -Wall -Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./src/image_opencv.cpp -o obj/image_opencv.o
gcc -Wall -Wno-unused-result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast
-DOPENCV -shared obj/gemm.o obj/utils.o obj/cuda.o obj/deconvolutional_layer.o
obj/convolutional_layer.o obj/list.o obj/image.o obj/activations.o obj/im2col.o
obj/col2im.o obj/blas.o obj/crop_layer.o obj/dropout_layer.o obj/maxpool_layer.o
obj/softmax layer.o obj/data.o obj/matrix.o obj/network.o obj/connected layer.o
obj/cost layer.o obj/parser.o obj/option list.o obj/detection layer.o
obj/route layer.o obj/upsample layer.o obj/box.o obj/normalization layer.o
obj/avgpool_layer.o obj/layer.o obj/local_layer.o obj/shortcut_layer.o
obj/logistic_layer.o obj/activation_layer.o obj/rnn_layer.o obj/gru_layer.o
obj/crnn_layer.o obj/demo.o obj/batchnorm_layer.o obj/region_layer.o
obj/reorg_layer.o obj/tree.o obj/lstm_layer.o obj/l2norm_layer.o
obj/yolo_layer.o obj/iseg_layer.o obj/image_opencv.o -o libdarknet.so -lm
-pthread `pkg-config --libs opencv` -lstdc++
ar rcs libdarknet.a obj/gemm.o obj/utils.o obj/cuda.o
obj/deconvolutional_layer.o obj/convolutional_layer.o obj/list.o obj/image.o
obj/activations.o obj/im2col.o obj/col2im.o obj/blas.o obj/crop_layer.o
obj/dropout_layer.o obj/maxpool_layer.o obj/softmax_layer.o obj/data.o
obj/matrix.o obj/network.o obj/connected_layer.o obj/cost_layer.o obj/parser.o
```

```
obj/option_list.o obj/detection_layer.o obj/route_layer.o obj/upsample_layer.o
obj/box.o obj/normalization_layer.o obj/avgpool_layer.o obj/layer.o
obj/local_layer.o obj/shortcut_layer.o obj/logistic_layer.o
obj/activation_layer.o obj/rnn_layer.o obj/gru_layer.o obj/crnn_layer.o
obj/demo.o obj/batchnorm layer.o obj/region layer.o obj/reorg layer.o obj/tree.o
obj/lstm_layer.o obj/l2norm_layer.o obj/yolo_layer.o obj/iseg_layer.o
obj/image opencv.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/captcha.c -o obj/captcha.o
gcc -Iinclude/ -Isrc/ -DOPENCV `pkg-config --cflags opencv` -Wall -Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/lsd.c -o obj/lsd.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/super.c -o obj/super.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/art.c -o obj/art.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/tag.c -o obj/tag.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/cifar.c -o obj/cifar.o
gcc -Iinclude/ -Isrc/ -DOPENCV `pkg-config --cflags opencv` -Wall -Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/go.c -o obj/go.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/rnn.c -o obj/rnn.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/segmenter.c -o obj/segmenter.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config -- cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/regressor.c -o obj/regressor.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/classifier.c -o obj/classifier.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/coco.c -o obj/coco.o
gcc -Iinclude/ -Isrc/ -DOPENCV `pkg-config --cflags opencv` -Wall -Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
./examples/yolo.c -o obj/yolo.o
gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
```

```
./examples/detector.c -o obj/detector.o
    gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
    result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
    ./examples/nightmare.c -o obj/nightmare.o
    gcc - Iinclude / - Isrc / - DOPENCV `pkg-config -- cflags opencv` - Wall - Wno-unused-
    result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
    ./examples/instance-segmenter.c -o obj/instance-segmenter.o
    gcc - Iinclude / - Isrc / - DOPENCV `pkg-config --cflags opencv` - Wall - Wno-unused-
    result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV -c
    ./examples/darknet.c -o obj/darknet.o
    gcc -Iinclude/ -Isrc/ -DOPENCV `pkg-config --cflags opencv` -Wall -Wno-unused-
    result -Wno-unknown-pragmas -Wfatal-errors -fPIC -Ofast -DOPENCV obj/captcha.o
    obj/lsd.o obj/super.o obj/art.o obj/tag.o obj/cifar.o obj/go.o obj/rnn.o
    obj/segmenter.o obj/regressor.o obj/classifier.o obj/coco.o obj/yolo.o
    obj/detector.o obj/nightmare.o obj/instance-segmenter.o obj/darknet.o
    libdarknet.a -o darknet -lm -pthread `pkg-config --libs opencv` -lstdc++
    libdarknet.a
    nvcc: NVIDIA (R) Cuda compiler driver
    Copyright (c) 2005-2020 NVIDIA Corporation
    Built on Wed Jul 22 19:09:09 PDT 2020
    Cuda compilation tools, release 11.0, V11.0.221
    Build cuda 11.0 bu.TC445 37.28845127 0
    NVIDIA-SMI has failed because it couldn't communicate with the NVIDIA driver.
    Make sure that the latest NVIDIA driver is installed and running.
[]: '/content/drive/My Drive/Colab Notebooks/IOT/Practica 11/darknet'
[]: # Descargar pesos de la red neuronal
    os.chdir('...')
     !wget https://pjreddie.com/media/files/yolov3.weights
     !ls
    os.chdir('darknet')
    --2021-06-01 15:54:00-- https://pjreddie.com/media/files/yolov3.weights
    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: 248007048 (237M) [application/octet-stream]
    Saving to: 'yolov3.weights.1'
    yolov3.weights.1
                       2021-06-01 15:54:08 (31.7 MB/s) - 'yolov3.weights.1' saved [248007048/248007048]
    darknet Detección_Objetos.ipynb img yolov3.weights yolov3.weights.1
```

[]: # Ejecuion del Codigo

!./darknet detect cfg/yolov3.cfg ../yolov3.weights ../img/gatitos.jpg from IPython.display import Image Image(filename='predictions.jpg')

layer f	ilters	size	input	output
0 conv	32	3 x 3 / 1	608 x 608 x 3 ->	608 x 608 x 32 0.639
BFLOPs				
1 conv	64	3 x 3 / 2	608 x 608 x 32 ->	304 x 304 x 64 3.407
BFLOPs				
2 conv	32	1 x 1 / 1	304 x 304 x 64 ->	304 x 304 x 32 0.379
BFLOPs				
3 conv	64	3 x 3 / 1	304 x 304 x 32 ->	304 x 304 x 64 3.407
BFLOPs				
4 res	1		304 x 304 x 64 ->	304 x 304 x 64
5 conv	128	3 x 3 / 2	304 x 304 x 64 ->	152 x 152 x 128 3.407
BFLOPs				
6 conv	64	1 x 1 / 1	152 x 152 x 128 ->	152 x 152 x 64 0.379
BFLOPs				
7 conv	128	3 x 3 / 1	152 x 152 x 64 ->	152 x 152 x 128 3.407
BFLOPs				
8 res			152 x 152 x 128 ->	152 x 152 x 128
9 conv	64	1 x 1 / 1	152 x 152 x 128 ->	152 x 152 x 64 0.379
BFLOPs				
10 conv	128	3 x 3 / 1	152 x 152 x 64 ->	152 x 152 x 128 3.407
BFLOPs				
11 res	8		152 x 152 x 128 ->	152 x 152 x 128
12 conv	256	3 x 3 / 2	152 x 152 x 128 ->	76 x 76 x 256 3.407
BFLOPs				
	128	1 x 1 / 1	76 x 76 x 256 ->	76 x 76 x 128 0.379
BFLOPs				
	256	3 x 3 / 1	76 x 76 x 128 ->	76 x 76 x 256 3.407
BFLOPs				
15 res			76 x 76 x 256 ->	76 x 76 x 256
	128	1 x 1 / 1	76 x 76 x 256 ->	76 x 76 x 128 0.379
BFLOPs				
	256	3 x 3 / 1	76 x 76 x 128 ->	76 x 76 x 256 3.407
BFLOPs				
18 res			76 x 76 x 256 ->	
	128	1 x 1 / 1	76 x 76 x 256 ->	76 x 76 x 128 0.379
BFLOPs				
	256	3 x 3 / 1	76 x 76 x 128 ->	76 x 76 x 256 3.407
BFLOPs				
21 res	18		76 x 76 x 256 ->	
	128	1 x 1 / 1	76 x 76 x 256 ->	76 x 76 x 128 0.379
BFLOPs				
23 conv	256	3 x 3 / 1	76 x 76 x 128 ->	76 x 76 x 256 3.407

BFLOPs								
24 res	21		76 x	76 x 256	->	76 x	76 x 256	
		1 x 1 / 1					76 x 128	
BFLOPs	120	1 1 1 / 1	10 11	10 K 200		10 11	10 A 120	0.010
	256	3 x 3 / 1	76 ×	76 v 128	->	76 ×	76 x 256	3 407
BFLOPs	200	0 x 0 / 1	10 A	70 X 120		10 A	70 X 200	0.101
27 res	24		76 v	76 x 256	->	76 v	76 x 256	
		1 x 1 / 1			->		76 x 128	
BFLOPs	120	1 X 1 / 1	10 X	70 X 200		10 X	70 X 120	0.013
	256	3 x 3 / 1	76 v	76 v 198	->	76 v	76 x 256	3 407
BFLOPs	200	0 X 0 / 1	10 X	70 X 120		10 X	10 X 200	0.401
30 res	27		76 v	76 x 256	->	76 v	76 x 256	
		1 x 1 / 1			->		76 x 236	0 370
BFLOPs	120	1 X 1 / 1	10 X	70 X 250		10 X	70 X 120	0.319
	256	3 x 3 / 1	76 ₩	76 v 100	->	76 v	76 x 256	3 407
BFLOPs	250	3 X 3 / 1	10 X	70 X 120		10 X	70 X 230	3.407
33 res	30		76 7	76 x 256	->	76 7	76 x 256	
		1 x 1 / 1			->		76 x 236	0 270
BFLOPs	120	1 X 1 / 1	70 X	70 X 250	_/	70 X	70 X 120	0.319
	256	3 x 3 / 1	76 v	76 + 100	->	76 7	76 x 256	2 407
BFLOPs	200	3 X 3 / 1	70 X	70 X 120	_/	70 X	70 X 250	3.407
36 res	33		76 7	76 x 256	->	76 7	76 x 256	
		3 x 3 / 2			->	76 x		
37 conv BFLOPs	512	3 X 3 / 2	76 X	70 X 250	-/	30 X	30 X 312	3.407
	256	1 1 / 1	20	20 E10	->	20	38 x 256	0 270
	250	1 x 1 / 1	30 X	30 X 312	-/	30 X	30 X 230	0.379
BFLOPs	E10	2 2 / 1	20	20 056		20	20 E10	2 407
	512	3 x 3 / 1	38 X	38 X 256	->	38 X	38 x 512	3.407
BFLOPs	27		20	38 x 512		20	20 E10	
40 res		1 1 / 1					38 x 512	
41 conv BFLOPs	250	1 x 1 / 1	36 X	38 X 512	->	38 x	38 x 256	0.379
	E10	2 2 / 1	20	20 056		20	38 x 512	2 407
BFLOPs	512	3 x 3 / 1	30 X	30 X 250	->	30 X	30 X 312	3.407
	40		20	20 E10		20	20 E10	
43 res				38 x 512			38 x 512	
BFLOPs	250	1 x 1 / 1	36 X	38 X 512	->	30 X	36 X 256	0.379
	E10	2 2 / 1	20	20 056		20	20 E10	2 407
BFLOPs	512	3 x 3 / 1	30 X	30 X 250	-/	30 X	38 x 512	3.407
46 res	42		20	38 x 512		20	38 x 512	
		1 x 1 / 1					38 x 256	
BFLOPs	200	1 X 1 / 1	30 X	30 X 312	_/	30 X	36 X 230	0.319
	E10	2 2 / 1	20	20 056		20	38 x 512	2 407
BFLOPs	512	3 x 3 / 1	30 X	30 X 230	->	30 X	30 X 312	3.407
	16		20 17	20 + 510		20 77	20 v 510	
49 res		1 x 1 / 1		38 x 512			38 x 512 38 x 256	N 270
	250	1 X 1 / 1	30 X	30 X 512	->	30 X	30 X 250	0.319
BFLOPs	E10	2 7 2 / 1	20	20 7 056		20	20 v E10	2 107
	512	3 x 3 / 1	30 X	30 X 250	->	30 X	30 X 512	3.407
BFLOPs								

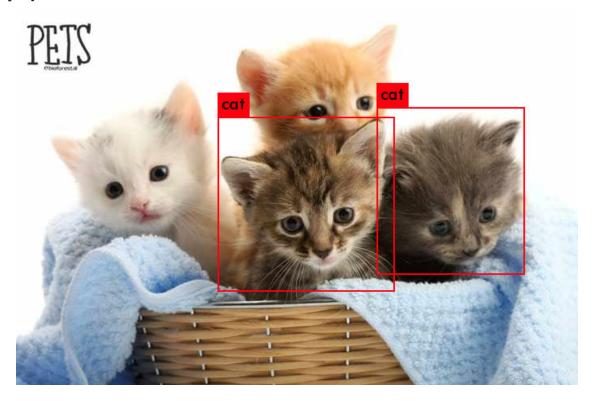
52 res	49		38 x	38 x 512	->	38 x	38 x 512	
		1 x 1 / 1					38 x 256	
BFLOPs								
54 conv	512	3 x 3 / 1	38 x	38 x 256	->	38 x	38 x 512	3.407
BFLOPs								
55 res	52		38 x	38 x 512	->	38 x	38 x 512	
56 conv	256	1 x 1 / 1	38 x	38 x 512	->	38 x	38 x 256	0.379
BFLOPs								
57 conv	512	3 x 3 / 1	38 x	38 x 256	->	38 x	38 x 512	3.407
BFLOPs								
58 res	55		38 x	38 x 512	->	38 x	38 x 512	
59 conv	256	1 x 1 / 1	38 x	38 x 512	->	38 x	38 x 256	0.379
BFLOPs		•						
	512	3 x 3 / 1	38 x	38 x 256	->	38 x	38 x 512	3.407
BFLOPs		, -						
61 res	58		38 x	38 x 512	->	38 x	38 x 512	
		3 x 3 / 2					19 x1024	
BFLOPs		0 11 0 , 2		00 11 011				01201
	512	1 x 1 / 1	19 x	19 ×1024	->	19 x	19 x 512	0.379
BFI.OPs	0	, _					10 11 011	0.0.0
64 conv	1024	3 x 3 / 1	19 x	19 x 512	->	19 x	19 x1024	3.407
BFLOPs	1021	0 11 0 7 1	10 11	10 11 012		10 11	10 111021	0.101
65 res	62		19 x	19 x1024	->	19 x	19 x1024	
		1 x 1 / 1					19 x 512	
BFLOPs	0	, _					10 11 011	0.0.0
	1024	3 x 3 / 1	19 x	19 x 512	->	19 x	19 x1024	3.407
BFLOPs	1021	0 11 0 7 1	10 11	10 11 012		10 11	10 111021	0.101
68 res	65		19 x	19 x1024	->	19 x	19 x1024	
		1 x 1 / 1					19 x 512	
BFLOPs	0	, _					10 11 011	0.0.0
	1024	3 x 3 / 1	19 x	19 x 512	->	19 x	19 x1024	3.407
BFLOPs		0 11 0 , 1						01201
71 res	68		19 x	19 x1024	->	19 x	19 x1024	
		1 x 1 / 1					19 x 512	0.379
BFLOPs	012		10 11	10 111021		10 11	10 11 012	0.010
	1024	3 x 3 / 1	19 x	19 x 512	->	19 x	19 x1024	3.407
BFLOPs	1021	0 11 0 7 1	10 11	10 11 012		10 11	10 111021	0.101
74 res	71		19 x	19 x1024	->	19 x	19 x1024	
		1 x 1 / 1					19 x 512	
BFLOPs	012	1 1 1 / 1	10 A	10 KIOZI		10 A	10 N 012	0.010
	1024	3 x 3 / 1	19 v	19 x 512	->	19 v	19 x1024	3 407
BFLOPs	1021	J A J / I	10 A	10 A 012	•	10 A	IO AIULT	0.101
	512	1 x 1 / 1	10 ₩	19 +1024	->	10 v	19 x 512	0 379
BFLOPs	UIZ	1 7 1 / 1	10 A	10 11024		10 A	10 A U12	0.019
	1024	3 x 3 / 1	10 ₩	19 v 519	->	10 ₩	19 x1024	3 407
BFLOPs	1024	3 x 0 / 1	10 A	10 A 012		10 A	10 11024	0.401
	510	1 x 1 / 1	10 v	19 🕶1024	->	19 ₩	19 x 512	0 370
BFLOPs	012	- A - / -	10 A	IO AIUZI		10 A	10 A U12	0.013
ט זטת זת								

80 conv BFLOPs	1024	3	x	3	/	1	19 x	1	19	x	512	->	19 x	19 x1024	3.407
	255	1	v	1	,	1	19 x	1	a	√ 1	.024	->	19 x	19 x 255	0.189
BFLOPs	200	1	Λ	1	′	1	13 A	_	J	ΛΙ	.024		19 A	19 A 200	0.103
82 yolo	70														
83 route	79 05 <i>c</i>	4		4	,	4	10		^		E40		10	10 050	0 005
	256	1	Х	Τ	/	Т	19 x		.9	Х	512	->	19 x	19 x 256	0.095
BFLOPs	,					_	4.0		_		056		20	20 050	
85 upsamp						2x	19 x]	.9	X	256	->	38 x	38 x 256	
86 route															
87 conv	256	1	X	1	/	1	38 x	3	38	X	768	->	38 x	38 x 256	0.568
BFLOPs															
88 conv	512	3	X	3	/	1	38 x	3	38	X	256	->	38 x	38 x 512	3.407
BFLOPs															
89 conv	256	1	X	1	/	1	38 x	3	38	X	512	->	38 x	38 x 256	0.379
BFLOPs															
90 conv	512	3	х	3	/	1	38 x	3	38	x	256	->	38 x	38 x 512	3.407
BFLOPs															
91 conv	256	1	х	1	/	1	38 x	3	38	x	512	->	38 x	38 x 256	0.379
BFLOPs															
92 conv	512	3	x	3	/	1	38 x		88	x	256	->	38 x	38 x 512	3.407
BFLOPs		Ū		Ū	,	_	00 11						00 11	00 11 012	0.120.
	255	1	v	1	/	1	38 x		28	v	512	->	38 x	38 x 255	0.377
BFLOPs	200	_	Λ	_	′	1	00 A		,0	^	012		00 A	00 x 200	0.577
94 yolo															
-	0.1														
95 route	91	4		4	,	4	20				056		20	20 100	0 005
	128	1	Х	Τ	/	1	38 x		88	Х	256	->	38 X	38 x 128	0.095
BFLOPs	_					_	0.0	_			400	_		70 400	
97 upsamp						2x	38 x		38	X	128	->	76 x	76 x 128	
98 route								_							
99 conv	128	1	X	1	/	1	76 x	7	6	X	384	->	76 x	76 x 128	0.568
BFLOPs															
100 conv	256	3	X	3	/	1	76 x	7	76	X	128	->	76 x	76 x 256	3.407
BFLOPs															
101 conv	128	1	X	1	/	1	76 x	7	76	X	256	->	76 x	76 x 128	0.379
BFLOPs															
102 conv	256	3	X	3	/	1	76 x	7	76	x	128	->	76 x	76 x 256	3.407
BFLOPs															
103 conv	128	1	х	1	/	1	76 x	7	76	x	256	->	76 x	76 x 128	0.379
BFLOPs															
104 conv	256	3	х	3	/	1	76 x	7	76	x	128	->	76 x	76 x 256	3.407
BFLOPs															
105 conv	255	1	x	1	/	1	76 x	7	76	x	256	->	76 x	76 x 255	0.754
BFLOPs	200	_		_	′	-	. 0 11		Ū		200		10 11	70 11 200	001
106 yolo															
Loading weig	rhte fr	Om		/-		10173	weigh	† c	D۰	nc	۱ د				
/img/gatit							_					nde			
cat: 99%	ros.lbg	•	r. T.	eu.	τC	ueu .	ш эт.	003	טטט	J	96C01	.au			
cac. 33%															

cat: 92%
Unable to init server: Could not connect: Connection refused

(predictions:883): Gtk-WARNING **: 16:02:13.488: cannot open
display:

[]:



```
[]: # Si se abrio el archivo ejecutar desde aqui
import os
#from google.colab import drive
#drive.mount('/content/drive')
#%load_ext autoreload
#%autoreload 2
os.chdir("drive/My Drive/Colab Notebooks/IOT/Practica 11/darknet")
!ls
os.getcwd()
```

backup	examples	LICENSE.fuck	LICENSE.v1	python
bad.list	include	LICENSE.gen	Makefile	README.md
cfg	libdarknet.a	LICENSE.gpl	obj	results
darknet	libdarknet.so	LICENSE.meta	photo.jpg	scripts
data	LICENSE	LICENSE.mit	predictions.jpg	src

[]: '/content/drive/My Drive/Colab Notebooks/IOT/Practica 11/darknet'

```
[]: # Tomar Fotos
     from IPython.display import display, Javascript
     from google.colab.output import eval_js
     from base64 import b64decode
     def take_photo(filename='photo.jpg', quality=0.8):
       js = Javascript('''
         async function takePhoto(quality) {
           const div = document.createElement('div');
           const capture = document.createElement('button');
           capture.textContent = 'Capture';
           div.appendChild(capture);
           const video = document.createElement('video');
           video.style.display = 'block';
           const stream = await navigator.mediaDevices.getUserMedia({video: true});
           document.body.appendChild(div);
           div.appendChild(video);
           video.srcObject = stream;
           await video.play();
           // Resize the output to fit the video element.
           google.colab.output.setIframeHeight(document.documentElement.
      ⇔scrollHeight, true);
           // Wait for Capture to be clicked.
           await new Promise((resolve) => capture.onclick = resolve);
           const canvas = document.createElement('canvas');
           canvas.width = video.videoWidth;
           canvas.height = video.videoHeight;
           canvas.getContext('2d').drawImage(video, 0, 0);
           stream.getVideoTracks()[0].stop();
           div.remove();
           return canvas.toDataURL('image/jpeg', quality);
         }
         ''')
       display(js)
       data = eval_js('takePhoto({})'.format(quality))
       binary = b64decode(data.split(',')[1])
       with open(filename, 'wb') as f:
         f.write(binary)
       return filename
```

```
[107]: # Activar camara y tomar foto
from IPython.display import Image
```

```
try:
    filename = take_photo()
    print('Saved to {}'.format(filename))

# Show the image which was just taken.
    display(Image(filename))
except Exception as err:
    print(str(err))
```

<IPython.core.display.Javascript object>
Saved to photo.jpg



```
[108]: # Objetos detectados
!./darknet detect cfg/yolov3.cfg ../yolov3.weights photo.jpg
#!chmod 755 -R .
```

```
layer filters size input output

0 conv 32 3 x 3 / 1 608 x 608 x 3 -> 608 x 608 x 32 0.639

BFLOPs

1 conv 64 3 x 3 / 2 608 x 608 x 32 -> 304 x 304 x 64 3.407

BFLOPs
```

2 conv BFLOPs	32	1 x 1 / 1	304 x 30	04 x 64	-> 3	04 x 3	304 x 32	0.379
	64	3 x 3 / 1	304 x 30	04 x 32	-> 3	04 x 3	304 x 64	3.407
4 res	1		304 x 30	04 x 64	-> 3	04 x 3	304 x 64	
5 conv		3 x 3 / 2				52 x 1	l52 x 128	3.407
BFLOPs		•						
	64	1 x 1 / 1	152 x 1!	52 x 128	-> 1	52 x 1	152 x 64	0.379
BFLOPs		, _			_			
7 conv	128	3 x 3 / 1	152 x 1	52 x 64	-> 1	52 x 1	l52 x 128	3.407
BFLOPs								
	5		152 x 1!	52 x 128	-> 1	52 x 1	l52 x 128	
		1 x 1 / 1					152 x 64	0 379
BFLOPs	01	1 11 1 / 1	102 11 1	02 11 120		J_ 11 1	102 11 01	0.010
	128	3 x 3 / 1	152 x 1!	52 x 64	-> 1	52 x 1	l52 x 128	3 407
BFLOPs	120	0 k 0 / 1	102 1 1	02 h 01	, -	<i>02 1</i> 1	102 A 120	0.101
	8		152 x 1!	52 x 128	-> 1	52 x 1	l52 x 128	
		3 x 3 / 2						3 407
BFLOPs	200	0 11 0 , 2	102 11 1	02 11 120	•	. 0 11	7 0 11 200	0.101
	128	1 x 1 / 1	76 x .	76 × 256	->	76 ×	76 x 128	0 379
BFLOPs	120	1 K 1 / 1	10 A	70 N 200	•	70 21	70 A 120	0.010
	256	3 x 3 / 1	76 x .	76 × 128	->	76 ×	76 x 256	3 407
BFLOPs	200	0 k 0 / 1	10 A	70 N 120	•	70 21	10 A 200	0.101
15 res	12		76 x .	76 x 256	->	76 ×	76 x 256	
		1 x 1 / 1					76 x 128	0.379
BFLOPs	120	1 11 1 / 1	10 11	70 11 200	•	. 0 11		0.010
	256	3 x 3 / 1	76 x .	76 × 128	->	76 ×	76 x 256	3 407
BFLOPs	200	0 11 0 , 1	10 11	. 0 11 120	•	. 0 11	7 0 11 200	0.101
18 res	15		76 x	76 x 256	->	76 x	76 x 256	
		1 x 1 / 1					76 x 128	0.379
BFLOPs		, _				. 0 11		
	256	3 x 3 / 1	76 x	76 x 128	->	76 x	76 x 256	3.407
BFLOPs		0 11 0 , 1				. 0 11		0.1.20.
21 res	18		76 x	76 x 256	->	76 x	76 x 256	
		1 x 1 / 1						0.379
BFLOPs		, _	,					
	256	3 x 3 / 1	76 x	76 x 128	->	76 x	76 x 256	3.407
BFLOPs			,					
24 res	21		76 x	76 x 256	->	76 x	76 x 256	
		1 x 1 / 1					76 x 128	0.379
BFLOPs		, _						
	256	3 x 3 / 1	76 x	76 x 128	->	76 x	76 x 256	3.407
BFLOPs	200	0 11 0 , 1	10 11	. 0 11 120		. 0 11		0.101
	24		76 x	76 x 256	->	76 x	76 x 256	
		1 x 1 / 1						0.379
BFLOPs		- , -	·					
	256	3 x 3 / 1	76 x	76 x 128	->	76 x	76 x 256	3.407
BFLOPs		 	·					
· ~								

20	07		76	70 050		70	70 050	
30 res		4 4 / 4					76 x 256	0.070
	128	1 x 1 / 1	76 X	76 X 256	->	76 X	76 x 128	0.379
BFLOPs	054	0 0 / 1	7.0	70 100		7.0	70 050	0 407
	256	3 x 3 / 1	76 X	76 x 128	->	76 X	76 x 256	3.407
BFLOPs								
33 res				76 x 256			76 x 256	
	128	1 x 1 / 1	76 x	76 x 256	->	76 x	76 x 128	0.379
BFLOPs								
	256	3 x 3 / 1	76 x	76 x 128	->	76 x	76 x 256	3.407
BFLOPs								
36 res				76 x 256			76 x 256	
	512	3 x 3 / 2	76 x	76 x 256	->	38 x	38 x 512	3.407
BFLOPs								
	256	1 x 1 / 1	38 x	38 x 512	->	38 x	38 x 256	0.379
BFLOPs								
39 conv	512	3 x 3 / 1	38 x	38 x 256	->	38 x	38 x 512	3.407
BFLOPs								
40 res	37		38 x	38 x 512	->	38 x	38 x 512	
41 conv	256	1 x 1 / 1	38 x	38 x 512	->	38 x	38 x 256	0.379
BFLOPs								
42 conv	512	3 x 3 / 1	38 x	38 x 256	->	38 x	38 x 512	3.407
BFLOPs								
43 res	40		38 x	38 x 512	->	38 x	38 x 512	
44 conv	256	1 x 1 / 1	38 x	38 x 512	->	38 x	38 x 256	0.379
BFLOPs								
45 conv	512	3 x 3 / 1	38 x	38 x 256	->	38 x	38 x 512	3.407
BFLOPs								
46 res	43		38 x	38 x 512	->	38 x	38 x 512	
47 conv	256	1 x 1 / 1	38 x	38 x 512	->	38 x	38 x 256	0.379
BFLOPs								
48 conv	512	3 x 3 / 1	38 x	38 x 256	->	38 x	38 x 512	3.407
BFLOPs								
49 res	46		38 x	38 x 512	->	38 x	38 x 512	
50 conv	256	1 x 1 / 1	38 x	38 x 512	->	38 x	38 x 256	0.379
BFLOPs								
51 conv	512	3 x 3 / 1	38 x	38 x 256	->	38 x	38 x 512	3.407
BFLOPs								
52 res	49		38 x	38 x 512	->	38 x	38 x 512	
53 conv	256	1 x 1 / 1	38 x	38 x 512	->	38 x	38 x 256	0.379
BFLOPs								
54 conv	512	3 x 3 / 1	38 x	38 x 256	->	38 x	38 x 512	3.407
BFLOPs								
55 res	52		38 x	38 x 512	->	38 x	38 x 512	
		1 x 1 / 1					38 x 256	0.379
BFLOPs		, –						
	512	3 x 3 / 1	38 x	38 x 256	->	38 x	38 x 512	3.407
BFLOPs		•						
58 res	55		38 x	38 x 512	->	38 x	38 x 512	
			- -	·			-	

59 conv	256	1	x	1	/ 1		38	x	38	x 5	512	->	38	x	38	x 256	0.379
BFLOPs																	
60 conv	512	3	X	3	/ 1		38	X	38	x 2	256	->	38	X	38	x 512	3.407
BFLOPs																	
61 res	58						38	x	38	x 5	512	->	38	х	38	x 512	
62 conv	1024	3	X	3	/ 2	2	38	x	38	x 5	512	->	19	x	19	x1024	3.407
BFLOPs																	
63 conv	512	1	x	1	/ 1		19	x	19	x1(024	->	19	х	19	x 512	0.379
BFLOPs																	
64 conv	1024	3	x	3	/ 1		19	x	19	x 5	512	->	19	х	19	x1024	3.407
BFLOPs																	
65 res	62						19	x	19	x1(024	->	19	х	19	x1024	
66 conv	512	1	х	1	/ 1		19	x	19	x1(024	->	19	х	19	x 512	0.379
BFLOPs																	
67 conv	1024	3	x	3	/ 1		19	x	19	х 5	512	->	19	х	19	x1024	3.407
BFLOPs																	
	65						19	x	19	x1()24	->	19	x	19	x1024	
69 conv																x 512	0.379
BFLOPs	012	_		_	, -		-0		10				10			012	0.0.0
70 conv	1024	3	v	3	/ 1		19	x	19	x !	512	->	19	x	19	x1024	3 407
BFLOPs	1021	Ü	Λ.	Ü	, -		10	Λ	10	Λ	712		10	Λ	10	XIOZ1	0.107
71 res	68						19	v	10	v 1(124	->	10	v	10	x1024	
72 conv		1	v	1	/ 1									x		x 512	
BFLOPs	012	_	Λ	1	, 1		13	Λ.	13	VI.	<i>7</i> 2 1		13	Λ.	13	X 012	0.075
73 conv	1024	3	77	2	/ 1		10	37	10	₹ [510	->	10	х	10	x1024	3 107
BFLOPs	1024	J	Λ	J	/ 1		13	А	19	А	J12		19	А	19	X1024	3.407
74 res	71						10		10	1(024	->	10		10	x1024	
74 res 75 conv		4															0 270
	512	1	Х	1	/ 1		19	Х	19	XI	J2 4	->	19	X	19	x 512	0.379
BFLOPs	1004	2		2	/ 1		10		10	[-10		10		10	1004	2 407
76 conv	1024	3	Х	3	/ 1		19	Х	19	х	012	->	19	Х	19	x1024	3.407
BFLOPs	F10	4		4	/ 4		10		10	1 (204		10		10	510	0 070
77 conv	512	1	Х	1	/ 1		19	Х	19	XI	J Z 4	->	19	Х	19	x 512	0.379
BFLOPs	1001	_		_	, ,		4.0		4.0		-40		4.0		4.0	1001	0 407
78 conv	1024	3	X	3	/ 1		19	X	19	х	512	->	19	X	19	x1024	3.407
BFLOPs	E40				, ,		4.0		4.0		204		4.0		4.0	E40	0.070
79 conv	512	1	X	1	/ 1		19	Х	19	X1()24	->	19	X	19	x 512	0.379
BFLOPs	1001	_		_	, ,		4.0		4.0		- 4 0		4.0		4.0	4004	0 407
80 conv	1024	3	X	3	/ 1		19	X	19	х	512	->	19	X	19	x1024	3.407
BFLOPs	0.55				, ,								4.0			055	
81 conv	255	1	X	1	/ 1		19	Х	19	x1()24	->	19	X	19	x 255	0.189
BFLOPs																	
82 yolo	7 6																
83 route										_							
84 conv	256	1	X	1	/ 1		19	X	19	x 5	512	->	19	X	19	x 256	0.095
BFLOPs	_				_												
85 upsam	_				2x	-	19	X	19	x 2	256	->	38	X	38	x 256	
86 route					,												
87 conv	256	1	X	1	/ 1		38	X	38	х	768	->	38	X	38	x 256	0.568

```
BFLOPs
         88 conv
                    512 3 x 3 / 1
                                     38 x 38 x 256
                                                            38 x 38 x 512 3.407
                                                      ->
      BFLOPs
         89 conv
                    256 1 x 1 / 1
                                     38 x 38 x 512
                                                      ->
                                                            38 x 38 x 256 0.379
      BFLOPs
         90 conv
                    512 3 x 3 / 1
                                     38 x 38 x 256
                                                            38 x 38 x 512 3.407
                                                      ->
      BFLOPs
                    256 1 x 1 / 1
         91 conv
                                     38 x 38 x 512
                                                            38 x 38 x 256
      BFLOPs
         92 conv
                    512 3 x 3 / 1
                                     38 x 38 x 256
                                                            38 x 38 x 512 3.407
                                                      ->
      BFLOPs
         93 conv
                    255 1 x 1 / 1
                                     38 x 38 x 512
                                                            38 x 38 x 255 0.377
                                                      ->
      BFLOPs
         94 yolo
         95 route
                  91
         96 conv
                    128 1 x 1 / 1
                                     38 x 38 x 256
                                                            38 x 38 x 128 0.095
                                                      ->
      BFLOPs
                                     38 x 38 x 128
                                                            76 x 76 x 128
         97 upsample
                                2x
                                                      ->
         98 route
                  97 36
         99 conv
                                     76 x 76 x 384
                                                            76 x 76 x 128 0.568
                    128 1 x 1 / 1
                                                      ->
      BFLOPs
        100 conv
                    256 3 x 3 / 1
                                     76 x 76 x 128
                                                            76 x 76 x 256
                                                                           3.407
                                                      ->
      BFI.OPs
                    128 1 x 1 / 1
                                     76 x 76 x 256
                                                            76 x 76 x 128 0.379
        101 conv
                                                      ->
      BFI.OPs
        102 conv
                    256 3 x 3 / 1
                                     76 x 76 x 128
                                                            76 x 76 x 256 3.407
                                                      ->
      BFLOPs
                                     76 x 76 x 256
        103 conv
                    128 1 x 1 / 1
                                                            76 x 76 x 128 0.379
                                                      ->
      BFLOPs
        104 conv
                    256
                        3 x 3 / 1
                                     76 x 76 x 128
                                                            76 x 76 x 256
                                                                           3.407
      BFLOPs
                    255 1 x 1 / 1
                                     76 x 76 x 256
                                                            76 x 76 x 255 0.754
        105 conv
                                                      ->
      BFLOPs
        106 yolo
      Loading weights from ../yolov3.weights...Done!
      photo.jpg: Predicted in 25.717637 seconds.
      chair: 65%
      cat: 93%
      person: 100%
      Unable to init server: Could not connect: Connection refused
      (predictions:1366): Gtk-WARNING **: 02:02:50.763: cannot
      open display:
[109]: from IPython.display import Image
```

[109]:

Image(filename='predictions.jpg')

