The difference between yolov4 and yolov4-tiny is: tiny is a compressed version of yolov4, which mainly runs the core version of small computing power cpu. The frame rate of the tiny version on jetso nano will be more than ten times higher than that of yolov4. We recommend using yolov4-tiny.

1. Insall CUDA，OpenCV，cuDNN

Input following command to download

git clone https://github.com/AlexeyAB/darknet.git

2.Input following command

cd darknet

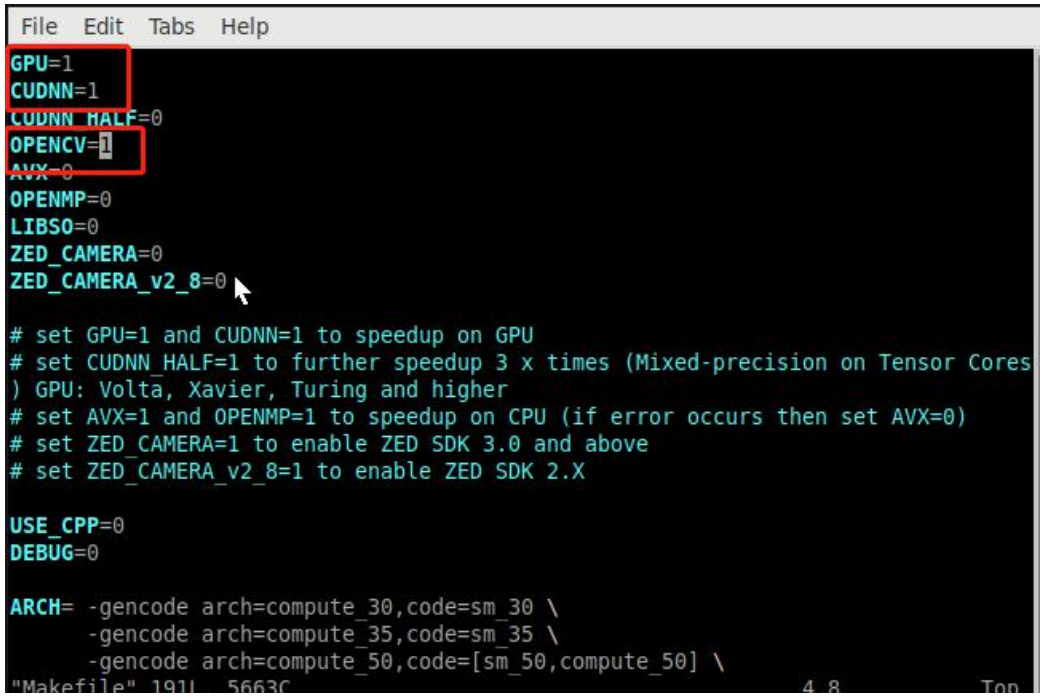
sudo vim Makefile　#modify Makefile

3. Modify the content as shown below

GPU=1

CUDNN=1

OPENCV=1

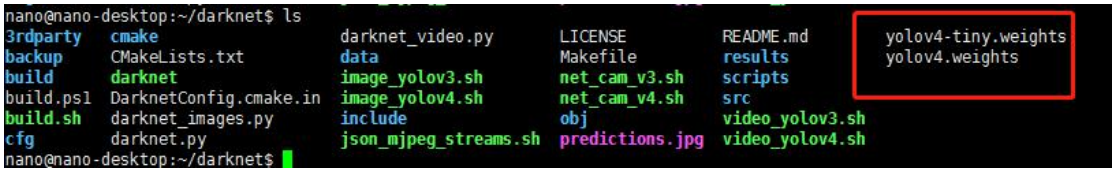


4. Compile

Input following command in darknet directory.

make　-j4

5. Copy the weight files yolov4.weights and yolov4-tiny.weights to the darknet directory.



6. Test

Yolov4 image detection

./darknet detect cfg/yolov4.cfg yolov4.weights data/dog.jpg

./darknet detector test cfg/coco.data cfg/yolov4.cfg yolov4.weights data/dog.jpg

Yolov4-tiny image detection

./darknet detect cfg/yolov4-tiny.cfg yolov4-tiny.weights data/dog.jpg

./darknet detector test cfg/coco.data cfg/yolov4-tiny.cfg yolov4-tiny.weights data/dog.jpg

Change the detection threshold

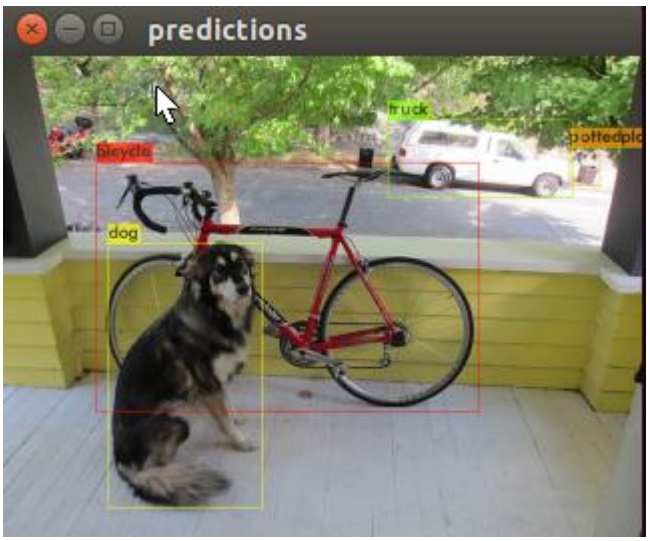
By default, YOLO only displays detected objects with a confidence of .25 or higher.

You can modify this setting with the following command.

For example, to display all detections, you can set the threshold to 0.1.

./darknet detect cfg/yolov4-tiny.cfg yolov4-tiny.weights data/dog.jpg -thresh 0.1

```
  21 conv    128       3 x 3/ 1     26 x  26 x 128 ->   26 x  26 x 128 0.199 BF
  22 route  21 20                                 ->   26 x  26 x 256
  23 conv    256       1 x 1/ 1     26 x  26 x 256 ->   26 x  26 x 256 0.089 BF
  24 route  18 23                                 ->   26 x  26 x 512
  25 max                2x 2/ 2     26 x  26 x 512 ->   13 x  13 x 512 0.000 BF
  26 conv    512       3 x 3/ 1     13 x  13 x 512 ->   13 x  13 x 512 0.797 BF
  27 conv    256       1 x 1/ 1     13 x  13 x 512 ->   13 x  13 x 256 0.044 BF
  28 conv    512       3 x 3/ 1     13 x  13 x 256 ->   13 x  13 x 512 0.399 BF
  29 conv    255       1 x 1/ 1     13 x  13 x 512 ->   13 x  13 x 255 0.044 BF
  30 yolo
[yolo] params: iou loss: ciou (4), iou_norm: 0.07, obj_norm: 1.00, cls_norm: 1.00, delta_norm: 1.00, scale_x_y: 1.05
nms_kind: greedynms (1), beta = 0.600000
  31 route  27                                    ->   13 x  13 x 256
  32 conv    128       1 x 1/ 1     13 x  13 x 256 ->   13 x  13 x 128 0.011 BF
  33 upsample                 2x    13 x  13 x 128 ->   26 x  26 x 128
  34 route  33 23                                 ->   26 x  26 x 384
  35 conv    256       3 x 3/ 1     26 x  26 x 384 ->   26 x  26 x 256 1.196 BF
  36 conv    255       1 x 1/ 1     26 x  26 x 256 ->   26 x  26 x 255 0.088 BF
  37 yolo
[yolo] params: iou loss: ciou (4), iou_norm: 0.07, obj_norm: 1.00, cls_norm: 1.00, delta_norm: 1.00, scale_x_y: 1.05
nms_kind: greedynms (1), beta = 0.600000
Total BFLOPS 6.910
avg_outputs = 310203
 Allocate additional workspace_size = 26.22 MB
Loading weights from yolov4-tiny.weights...
 seen 64, trained: 32012 K-images (500 Kilo-batches_64)
Done! Loaded 38 layers from weights-file
 Detection layer: 30 - type = 28
 Detection layer: 37 - type = 28
data/dog.jpg: Predicted in 1073.680000 milli-seconds.
bicycle: 29%
person: 25%
dog: 72%
cat: 16%
truck: 82%
car: 46%
```



Yolov4 video detection

(Users need to to upload the video files to be detected to the data folder)

./darknet detector demo cfg/coco.data cfg/yolov4.cfg yolov4.weights data/123.mp4

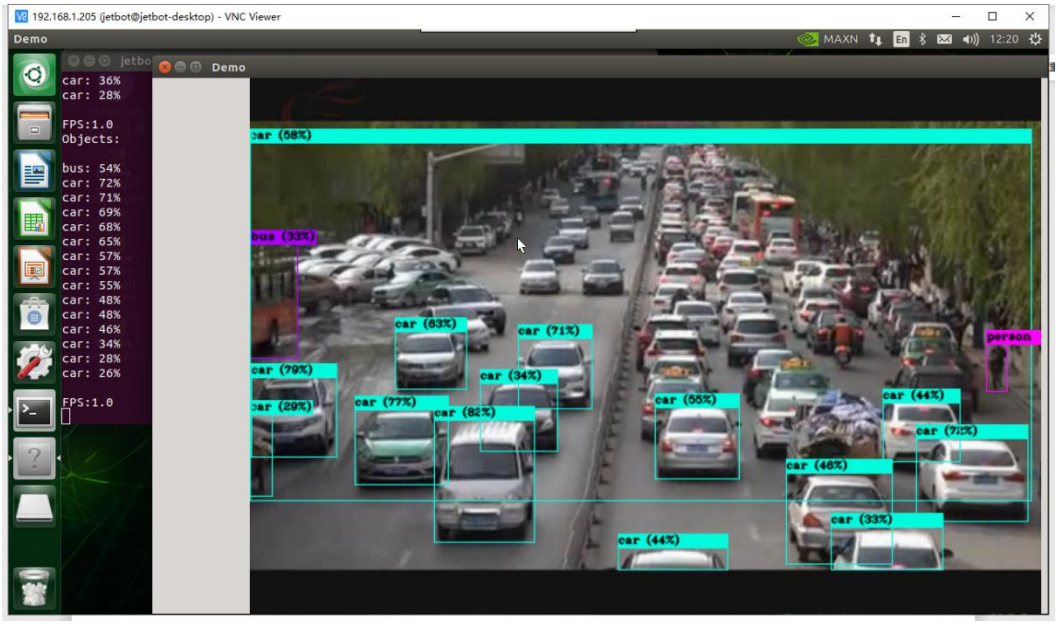
Yolov4-tiny video detection

(Users need to to upload the video files to be detected to the data folder)

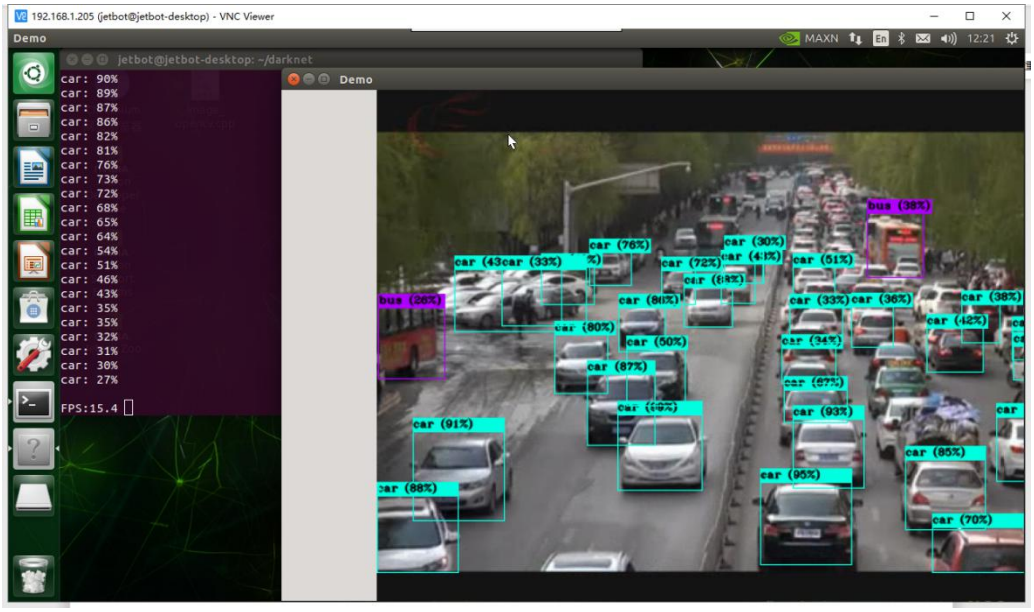
./darknet detector demo cfg/coco.data cfg/yolov4-tiny.cfg yolov4-tiny.weights data/xxx.mp4

```
nx@nx-desktop:~/darknet-master$ ./darknet detector demo cfg/coco.data cfg/yolov4.cfg yolov4.weights data/123.mp4
 CUDA-version: 10020 (10020), cuDNN: 8.0.0, GPU count: 1
 OpenCV version: 4.1.1
Demo
 0 : compute_capability = 720, cudnn_half = 0, GPU: Xavier
net.optimized_memory = 0
mini_batch = 1, batch = 1, time_steps = 1, train = 0
   layer   filters  size/strd(dil)      input                output
   0 conv     32       3 x 3/ 1    608 x 608 x   3 ->  608 x 608 x  32 0.639 BF
   1 conv     64       3 x 3/ 2    608 x 608 x  32 ->  304 x 304 x  64 3.407 BF
   2 conv     64       1 x 1/ 1    304 x 304 x  64 ->  304 x 304 x  64 0.757 BF
   3 route  1                                 ->  304 x 304 x  64
   4 conv     64       1 x 1/ 1    304 x 304 x  64 ->  304 x 304 x  64 0.757 BF
   5 conv     32       1 x 1/ 1    304 x 304 x  64 ->  304 x 304 x  32 0.379 BF
   6 conv     64       3 x 3/ 1    304 x 304 x  32 ->  304 x 304 x  64 3.407 BF
```

Yolov4 result as shown below.



Yolov4-tiny result as shown below.



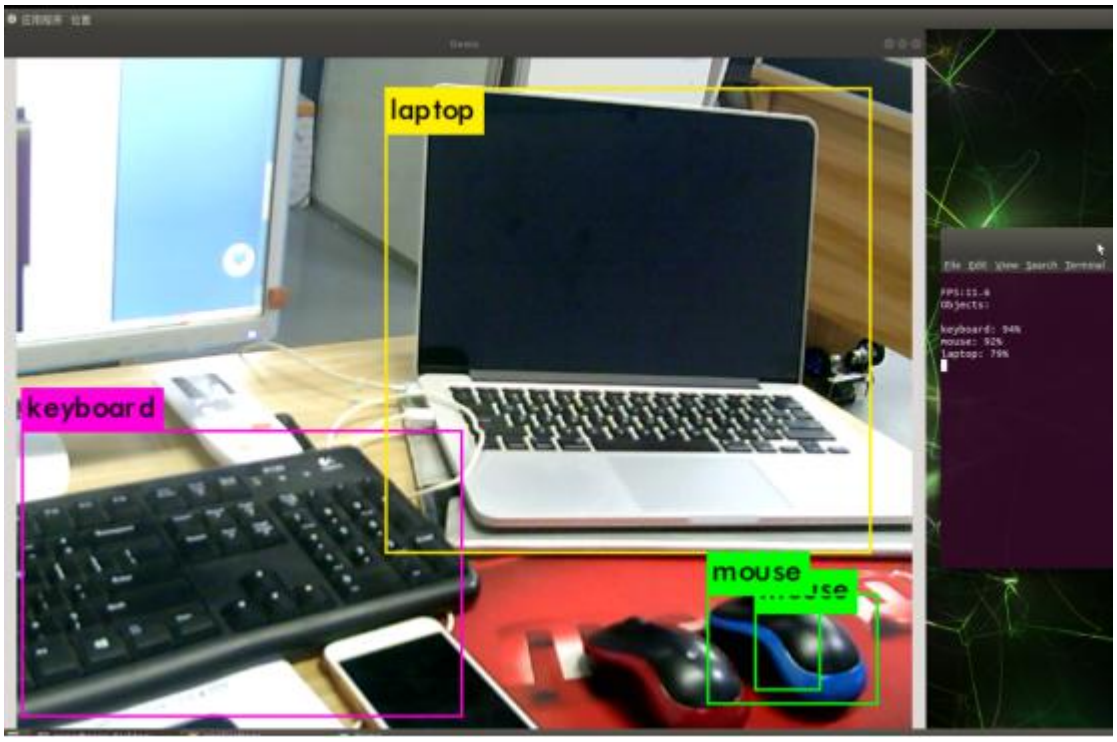
Yolov4 camera detection in real time.

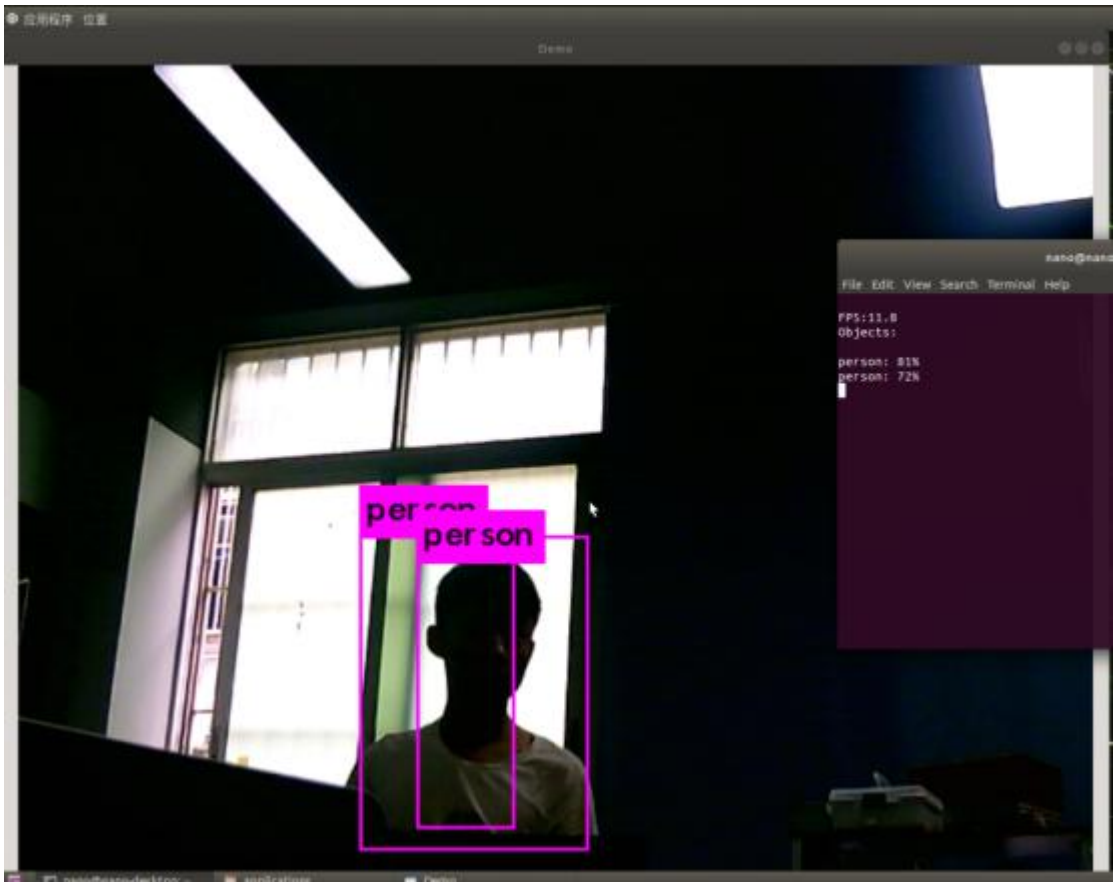
./darknet detector demo cfg/coco.data cfg/yolov4.cfg yolov4.weights /dev/video1

Yolov4 camera detection in real time.

./darknet detector demo cfg/coco.data cfg/yolov4-tiny.cfg yolov4-tiny.weights /dev/video1

Tip: Select the number corresponding to the USB camera for the video device.


laptop
keyboard
mouse


person


keyboard (88%)
keyboard (88%)
mouse (89%)
mouse (89%)
mouse (88%)
cell phone (88%)