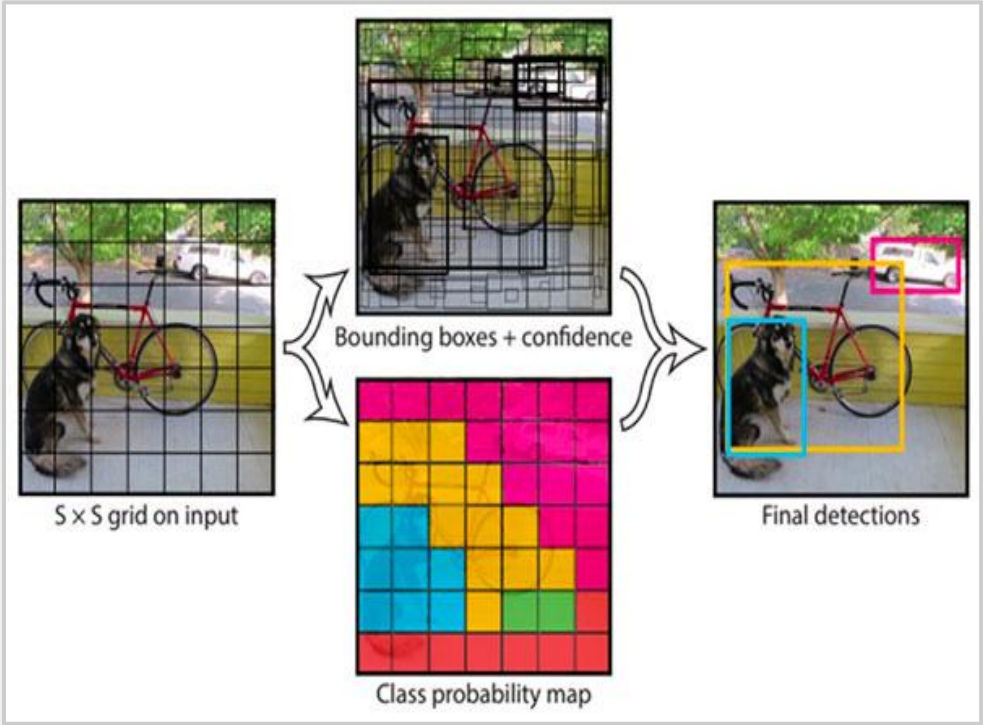
Benchmark

Yolo

-You Only Look Once;

-Detecção e classificação de objetos;

-OpenCV, Python.



coco.names

person	cow	tennis racket	sofa	scissors
bicycle	elephant	bottle	pottedplant	teddy bear
car	bear	wine glass	bed	hair drier
motorbike	zebra	cup	diningtable	toothbrush
aeroplane	giraffe	fork	toilet	
bus	backpack	knife	tvmonitor	
train	umbrella	spoon	laptop	
truck	handbag	bowl	mouse	
boat	tie	banana	remote	
traffic light	suitcase	apple	keyboard	
fire hydrant	frisbee	sandwich	cell phone	
stop sign	skis	orange	microwave	
parking meter	snowboard	broccoli	oven	
bench	sports ball	carrot	toaster	
bird	kite	hot dog	sink	
cat	baseball bat	pizza	refrigerator	
dog	baseball glove	donut	book	
horse	skateboard	cake	clock	
sheep	surfboard	chair	vase	

80 Objetos

yolov3.weight

- Arquivo de pesos gerado pela rede neural

yolov3.cfg

- Configurações da rede neural

Vídeo

Teste 1 : Intel Notebook I5 - 2410M

- 32 nm;
- 2 núcleos;
- 2 threads;
- 2.30 GHz;
- 3 MB de Cache;
- Velocidade de barramento de 4GT/s

Tempo de 8:33
Vídeo de 194 frames (6 segundos)
(30 fps 720p)

Teste 2 : Intel Notebook I7 - 6500U

- 14 nm;
- 2 núcleos;
- 4 threads;
- 2.50 GHz;
- 4 MB de Cache;
- Velocidade de barramento de 5GT/s

Tempo de 2:59
Vídeo de 194 frames (6 segundos)
(30 fps 720p)

Custo Benefício

Intel Notebook I5 - 2410M

Tempo Total: 8:33

Custo Aproximado: R$129,00

Intel Notebook I7 - 6500U

Tempo Total: 2:59

Custo Aproximado: R$2055,00

Aumento de 186% na velocidade

Aumento de 15 vezes no preço

GPU para Machine Learning

- Apresentam alto número de cores
- Ideais para cálculos de vetores
- Menos bottleneck devido a alta banda-larga

Teste CPU x GPU

Algoritmo: CIFAR10

Intel Core I7 7700

Custo Aproximado: R$1655,00

Tempo Total: 2,069s

GeForce GTX 1070

Custo Aproximado: R$1750,00

Tempo Total: 0,571s

Aumento de 262% na velocidade

Aumento de 1,06 vezes no preço

Teste CPU x GPU

Algoritmo: CIFAR10

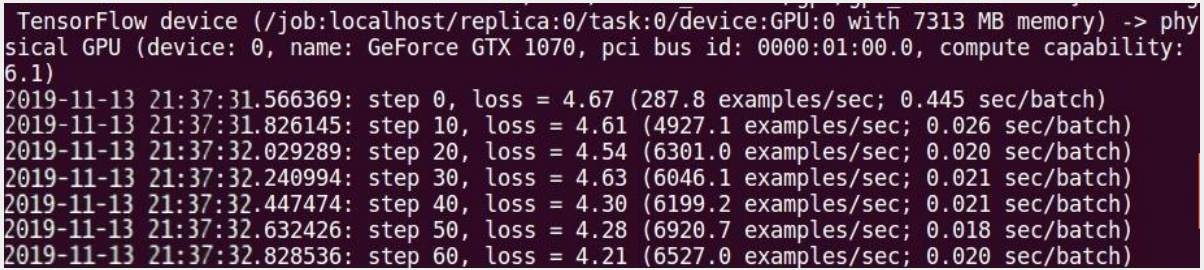
Intel Core I7 7700

```
2019-11-13 21:38:43 298426: step 0, loss = 4.68 (583.4 examples/sec; 0.219 sec/batch)
2019-11-13 21:38:43.423052: step 10, loss = 4.63 (409.6 examples/sec; 0.312 sec/batch)
2019-11-13 21:38:43.493110: step 20, loss = 4.39 (416.9 examples/sec; 0.307 sec/batch)
2019-11-13 21:38:43.563831: step 30, loss = 4.47 (416.8 examples/sec; 0.307 sec/batch)
2019-11-13 21:38:43.653078: step 40, loss = 4.31 (414.3 examples/sec; 0.309 sec/batch)
2019-11-13 21:38:43.707880: step 50, loss = 4.28 (419.0 examples/sec; 0.305 sec/batch)
2019-11-13 21:38:43.805906: step 60, loss = 4.41 (413.2 examples/sec; 0.310 sec/batch)
```

Teste CPU x GPU

Algoritmo: CIFAR10

GeForce GTX 1070



Considerações finais