

Follow Person III

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Soluciones

- Local:
 - Seguir en nuevo equipo
 - Darknet acabará compilando
- Jetson:
 - Buscar darknet con CUDA < 10.2
 - Otra implementación de YOLO
 - Probar con cable original del kit



NVIDIA Jetson AGX Xavier

- Actualizar Jetpack → SDK Manager ✓

- NVIDIA 1 - Factory Setup
- NVIDIA 2 - Custom Setup

- Darknet:
 - CUDA ≥ 10.2 ✓

```
jtop AGX Xavier [16GB] - JC: Inactive - 15W DESKTOP
NVIDIA Jetson AGX Xavier [16GB] - Jetpack 4.6 [L4T 32.6.1]

- Up Time:      0 days 0:28:7                Version: 3.1.1
- Jetpack:      4.6 [L4T 32.6.1]             Author: Raffaello Bonghi
- Board:                                     e-mail: raffaello@rnext.it
  * Type:        AGX Xavier [16GB]
  * SOC Family:  tegra194      ID: 25
  * Module:      P2888-0001    Board: P2822-0000
  * Code Name:    galen
  * Cuda ARCH:    7.2
  * Serial Number: 0421419020930

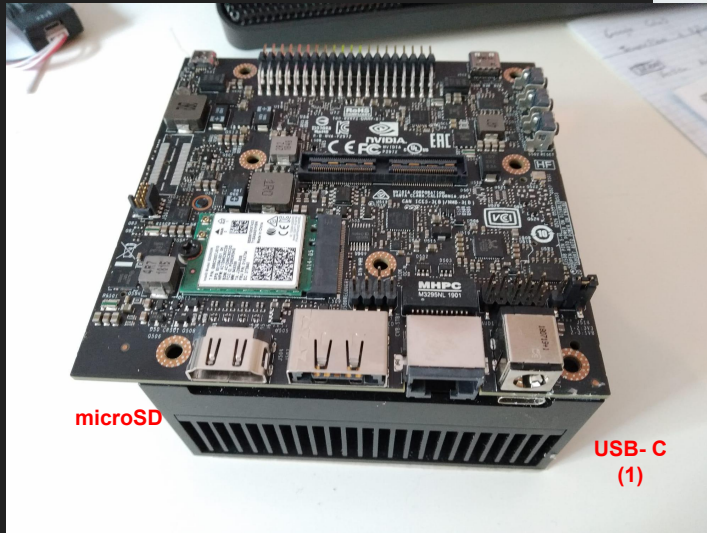
- Libraries:
  * CUDA:         10.2.300
  * OpenCV:        4.1.1 compiled CUDA: NO
  * TensorRT:      8.0.1.6
  * VPI:           ii libnvvpi1 1.1.12 arm64 NVIDIA Vision Programming Interface
li* VisionWorks:  1.6.0.501
  * Vulkan:        1.2.70
  * cuDNN:         8.2.1.32

- Hostname:      jetson
- Interfaces:
  * eth0:         10.117.150.93
  * docker0:      172.17.0.1

1ALL 2GPU 3CPU 4MEM 5CTRL 6INFO Quit Raffaello Bonghi
```

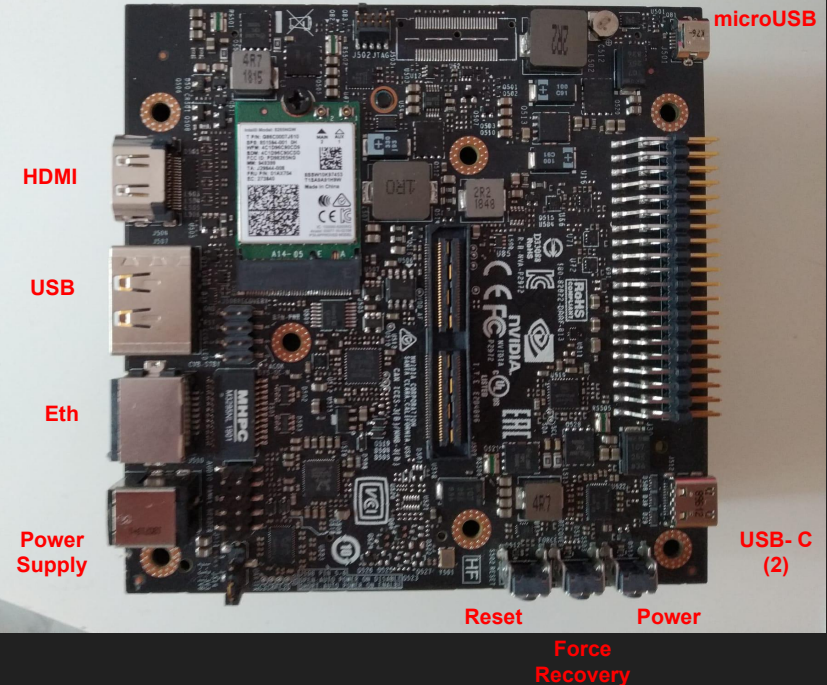
SDK Manager

- No detecta Nvidia Jetson
 - lsusb
- USB-C (2) & Recovery Mode



Recovery Mode

- (1. Off) Hold Force Recovery + Press Power
- (2. On) Hold Force Recovery + Hold Reset + Release



Setup I

1. ROS ([base](#))

```
ROS_DISTRO=melodic
ROS_WORKSPACE=/home/nvidia/catkin_ws
```

2. catkin_ws

```
$ sudo apt-get install python3-catkin-tools
$ cd && mkdir -p /catkin_ws/src
$ cd /catkin_ws && catkin init
$ catkin build
```

3. drones

```
$ sudo apt-get install ros-melodic-mavros ros-melodic-mavros-extras ros-melodic-cv-bridge
$ cd repos && git clone https://github.com/JdeRobot/drones.git -b melodic-devel
$ roscd && cd src && ln -s ~/repos/drones/drone_wrapper .
$ roscd && catkin build 1
```

4. Darknet

```
export PATH="$PATH:/usr/local/cuda-10.2/bin"
export LD_LIBRARY_PATH="$LD_LIBRARY_PATH:/usr/local/cuda-10.2/lib64"

$ git clone https://github.com/AlexeyAB/darknet
$ cd darknet
$ wget https://github.com/AlexeyAB/darknet/releases/download/darknet\_yolo\_v4/yolov4\_weights
$ make # after setting FLAGS in Makefile
```

Darknet sobre Jetson

- Darknet Wrapper
- YOLOv4 → demasiado pesada, tiny?

```
import numpy as np
import cv2
import yolo_utils

yolo4_tiny = yolo_utils.YOLOv4Tiny()
# yolo4 = yolo_utils.YOLOv4()

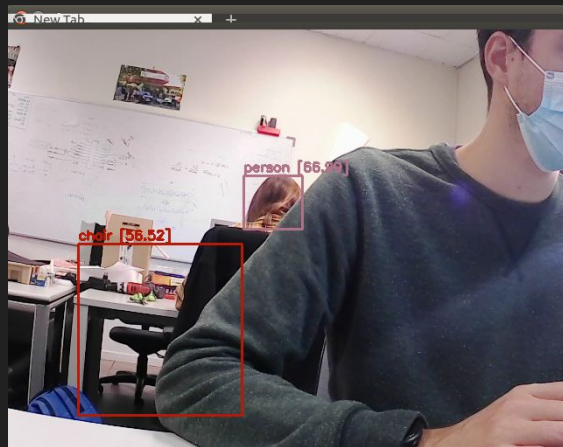
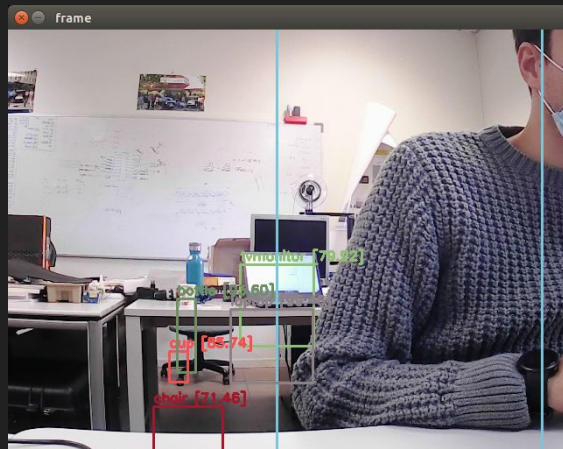
cap = cv2.VideoCapture("/dev/video0") # check this
while(True):
    # Capture frame-by-frame
    ret, frame = cap.read()

    # Flip vertically
    frame = cv2.flip(frame, 0)

    # Our operations on the frame come here
    yolo4_tiny.detect_frame(frame)

    # Display the resulting frame
    cv2.imshow('frame', frame)
    if cv2.waitKey(1) & 0xFF == ord('q'):
        break

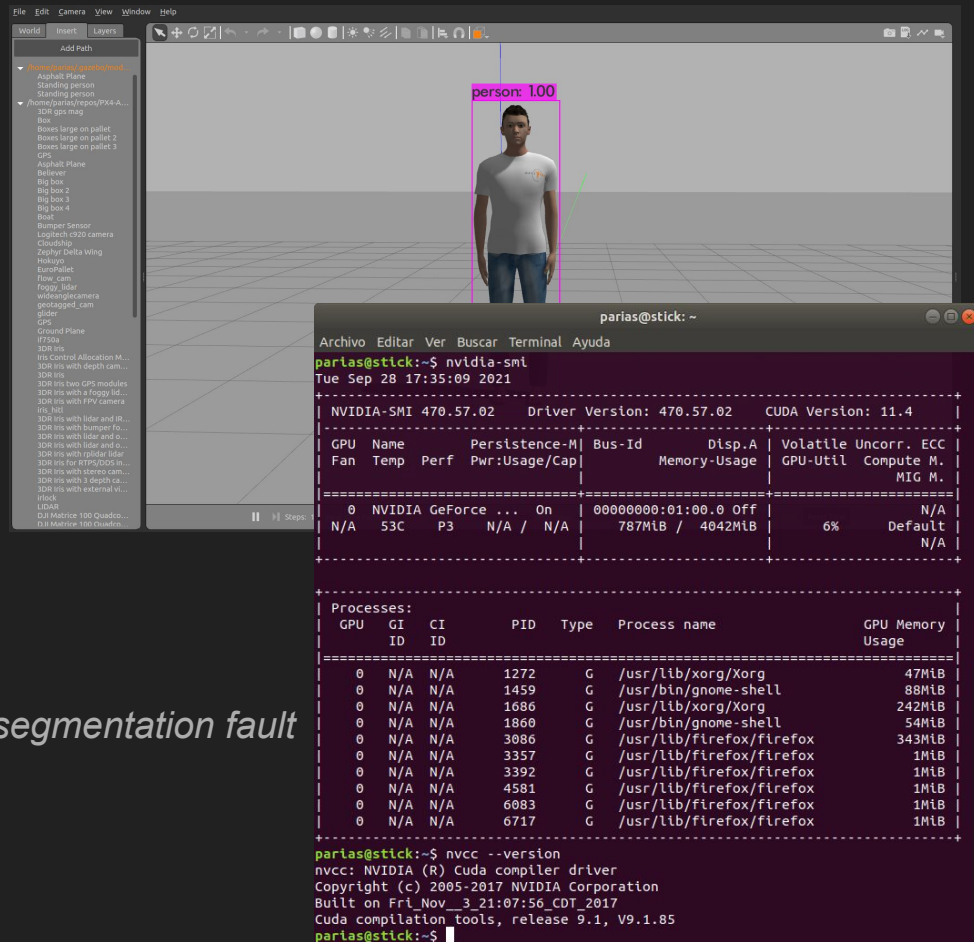
# When everything done, release the capture
cap.release()
cv2.destroyAllWindows()
```



Darknet en local

- Muy lento
- Sin espacio para CUDA cuDNN
- Ubuntu -> USB 128Gb
 - Todavía en proceso de instalación
 - CUDA y cuDNN
 - Problema al compilar darknet -> *segmentation fault*

CUDA v11.4
nvcc v9.1
cuDNN v8.2.4



The screenshot shows a 3D environment with a person model. A label "person: 100" is visible above the model. The terminal window displays the following information:

```
parias@stick: ~  
Archivo Editar Ver Buscar Terminal Ayuda  
parias@stick:~$ nvidia-smi  
Tue Sep 28 17:35:09 2021
```

NVIDIA-SMI 470.57.02 Driver Version: 470.57.02 CUDA Version: 11.4										
		GPU		Name	Persistence-M	Bus-Id	Disp.A	Memory-Usage		Volatile Uncorr. ECC
Fan	Temp	Perf	Pwr:Usage/Cap							GPU-Util Compute MIG M.
0	N/A	53C	P3	N/A	N/A	00000000:01:00:0	Off	787MiB / 4042MiB	6%	Default N/A

```
parias@stick:~$ ps -eo pid,ppid,cmd,stat,cpu,mem --sort=mem
```

Processes:						
GPU	GI ID	CI ID	PID	Type	Process name	GPU Memory Usage
0	N/A	N/A	1272	G	/usr/lib/xorg/Xorg	47MiB
0	N/A	N/A	1459	G	/usr/bin/gnome-shell	88MiB
0	N/A	N/A	1686	G	/usr/lib/xorg/Xorg	242MiB
0	N/A	N/A	1860	G	/usr/bin/gnome-shell	54MiB
0	N/A	N/A	3086	G	/usr/lib/firefox/firefox	343MiB
0	N/A	N/A	3357	G	/usr/lib/firefox/firefox	1MiB
0	N/A	N/A	3392	G	/usr/lib/firefox/firefox	1MiB
0	N/A	N/A	4581	G	/usr/lib/firefox/firefox	1MiB
0	N/A	N/A	6083	G	/usr/lib/firefox/firefox	1MiB
0	N/A	N/A	6717	G	/usr/lib/firefox/firefox	1MiB

```
parias@stick:~$ nvcc --version  
nvcc: NVIDIA (R) Cuda compiler driver  
Copyright (c) 2005-2017 NVIDIA Corporation  
Built on Fri Nov 3 21:07:56 CDT 2017  
Cuda compilation tools, release 9.1, V9.1.85  
parias@stick:~$
```