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NVIDIA Jetson Xavier NX

Agenda:

- Hands on
  - Caratteristiche
  - Prestazioni
  - Benchmark
  - Cloud Native
- Q&A

Recensione completa

https://www.rnext.it/review/jetson-xavier-nx/

Raffaello Bonghi

Qualcosa su di me

- Robotics and control theory engineer
- Website: https://www.rnext.it

Panther

- Robot ROS based
- NVIDIA Jetson AGX Xavier
- Stereolabs ZED2

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ROS

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NVIDIA Jetson Xavier NX

- Caratteristiche
- Architettura
- Confronto con NVIDIA Jetson Nano

NVIDIA

NVIDIA Jetson Xavier NX

Caratteristiche

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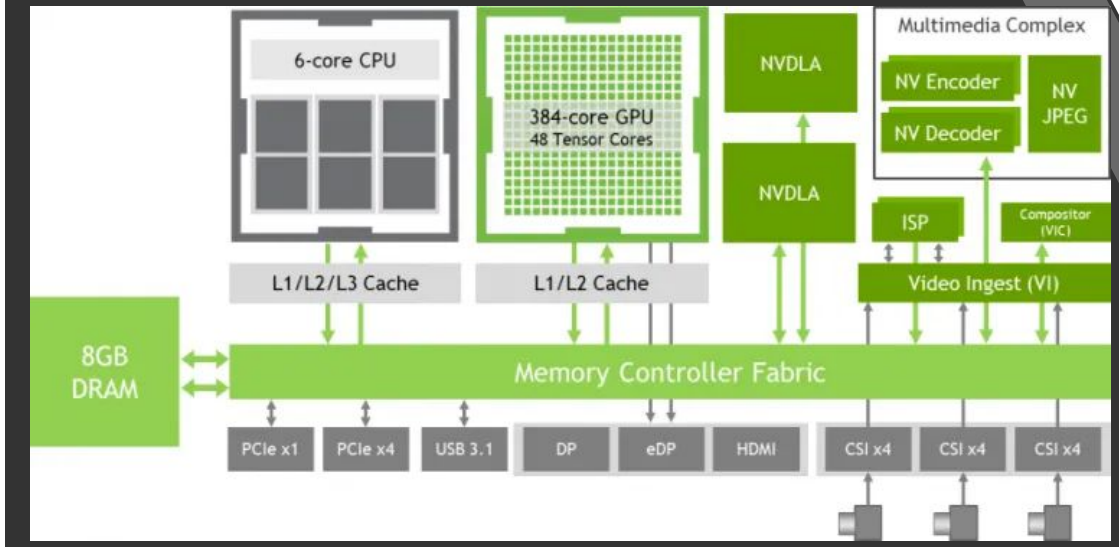
Architettura

Developer Kit Technical Specifications	
GPU	NVIDIA Volta™ architecture with 384 NVIDIA® CUDA® cores and 48 Tensor cores
CPU	6-core NVIDIA Carmel ARM®v8.2 64-bit CPU 6 MB L2 + 4 MB L3
DLA	2x NVDLA Engines
Vision Accelerator	7-Way VLIW Vision Processor
Memory	8 GB 128-bit LPDDR4x 51.2GB/s
Storage	microSD (Card not included)
Video Encode	2x 4Kp30 | 6x 1080p 60 | 14x 1080p30 (H.265/H.264)
Video Decode	2x 4Kp60 | 4x 4Kp30 | 12x 1080p60 | 32x 1080p30 (H.265) 2x 4Kp30 | 6x 1080p60 |16x 1080p30 (H.264)
Camera	2x MIPI CSI-2 D-PHY lanes
Connectivity	Gigabit Ethernet, M.2 Key E (WiFi/BT included), M.2 Key M (NVMe)
Display	HDMI and DP
USB	4x USB 3.1, USB 2.0 Micro-B
Others	GPIOs, I2C, I2S, SPI, UART
Mechanical	103 mm x 90.5 mm x 34 mm



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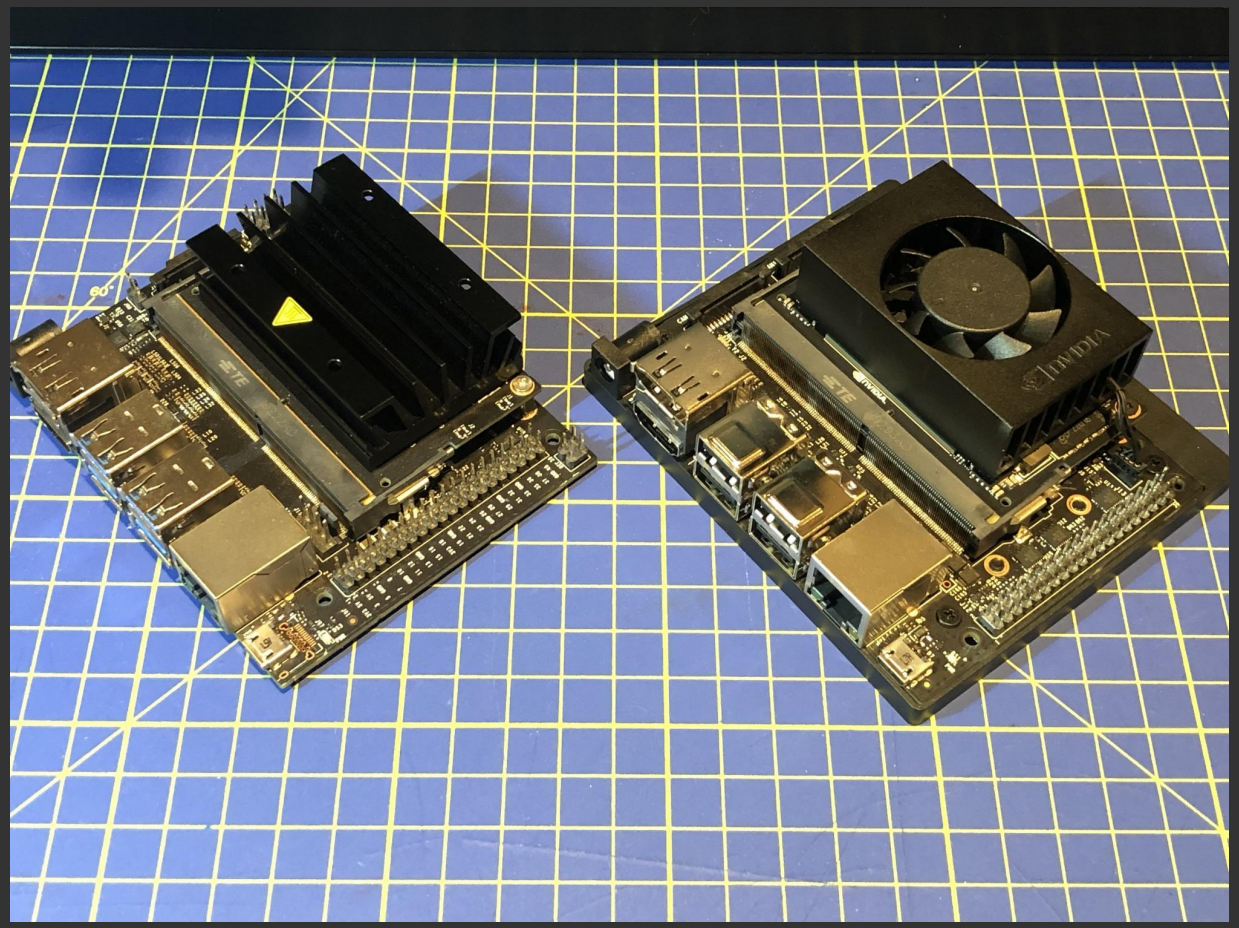
Confronto

Jetson Nano <-> Jetson Xavier NX



NVIDIA Jetson Xavier NX

Tabella Prestazioni

	NVP model		With Jetson Clocks
0	**MODE_15W_2CORE**	1.2-1.9Ghz	1.9Ghz
1	**MODE_15W_4CORE**	1.2-1.4Ghz	1.4Ghz
2	**MODE_15W_6CORE**	1.2-1.4Ghz	1.4Ghz
3	**MODE_10W_2CORE**	1.2-1.5Ghz	1.5Ghz
4	**MODE_10W_4CORE**	1.2Ghz	1.2Ghz

CPU frequencies

	Without Jetson Clocks	10W Jetson Clocks	15W Jetson Clocks
GPU	114Mhz	803Mhz	1.1Ghz
EMC	204Mhz	1.6Ghz	1.6Ghz

GPU frequencies

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NVIDIA Jetson Xavier NX

Benchmarks

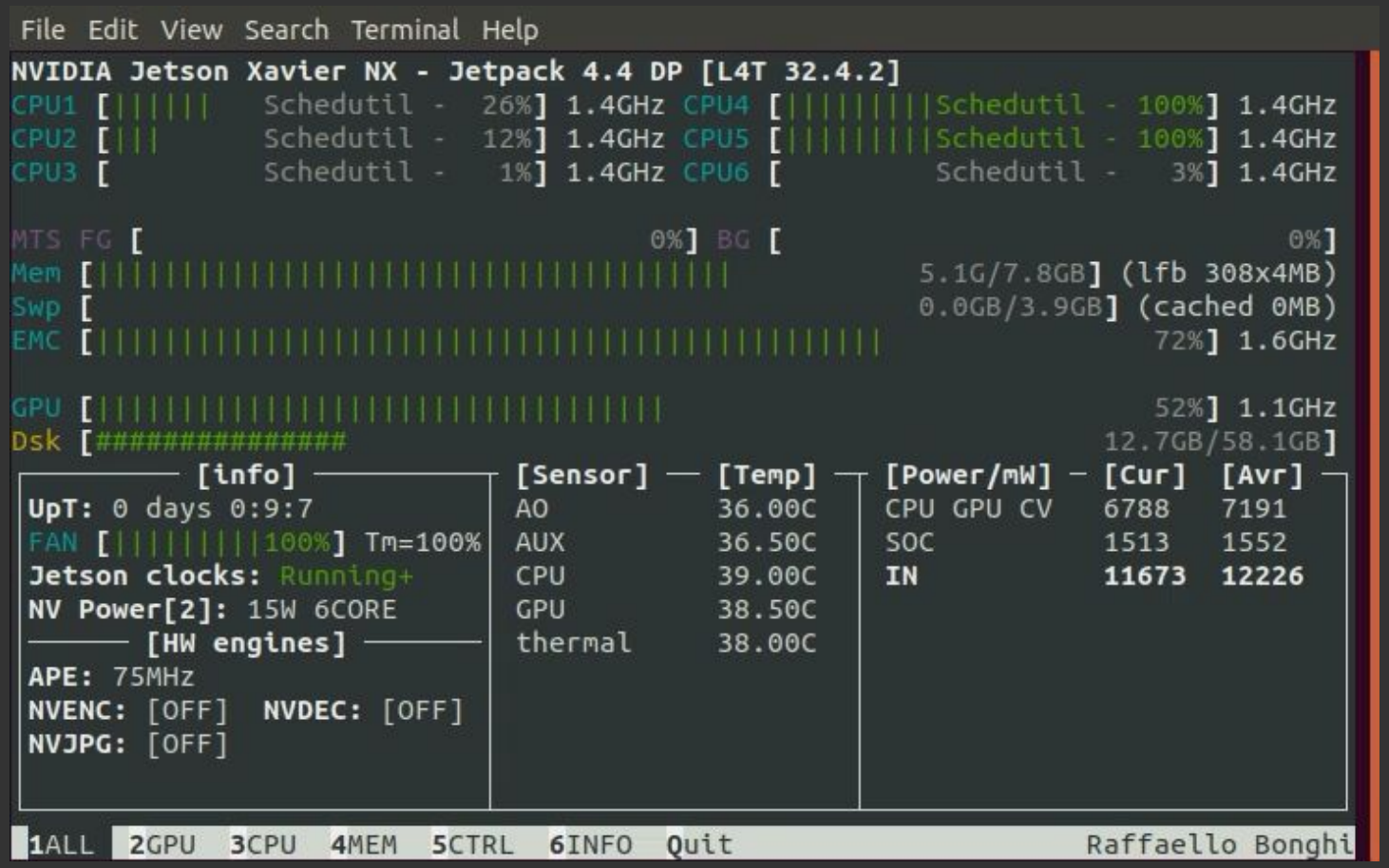
Model Name	FPS Jetson Nano	FPS Jetson Xavier NX 15W 2 Core With Jetson Clocks	FPS Jetson Xavier NX 15W 6 core With Jetson Clocks
0 inception_v4	10.631948	316.895566	316.478577
1 vgg19_N2	7.692173	65.424157	63.582191
2 super_resolution_bsd500	10.704373	152.186116	159.201983
3 unet-segmentation	11.502981	144.152678	144.005892
4 pose_estimation	10.191128	234.183907	235.400592
5 yolov3-tiny-416	33.927461	570.071398	589.816623
6 ResNet50_224x224	25.933791	845.337518	830.919699
7 ssd-mobilenet-v1	29.884008	884.193146	894.364623

Benchmark compare Jetson nano and Jetson Xavier NX

Potete eseguire questi benchmark eseguendo questo
https://github.com/NVIDIA-AI-IOT/jetson_benchmarks

jetson-stats (1/2)

jtop - Monitor and control



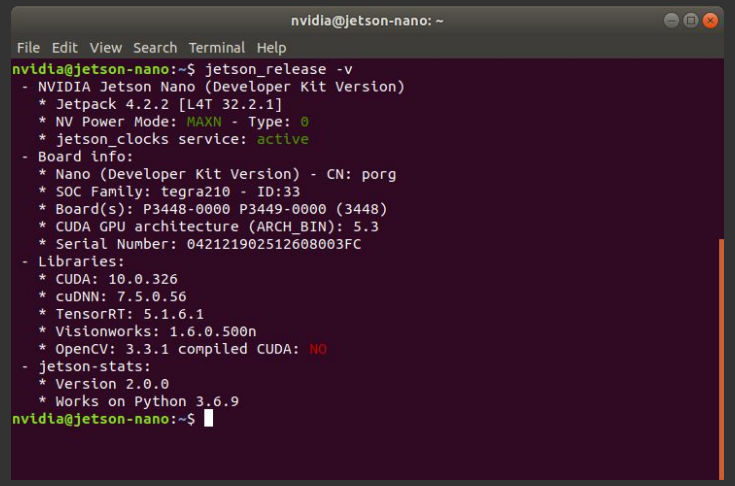
sudo –H pip install –U jetson-stats

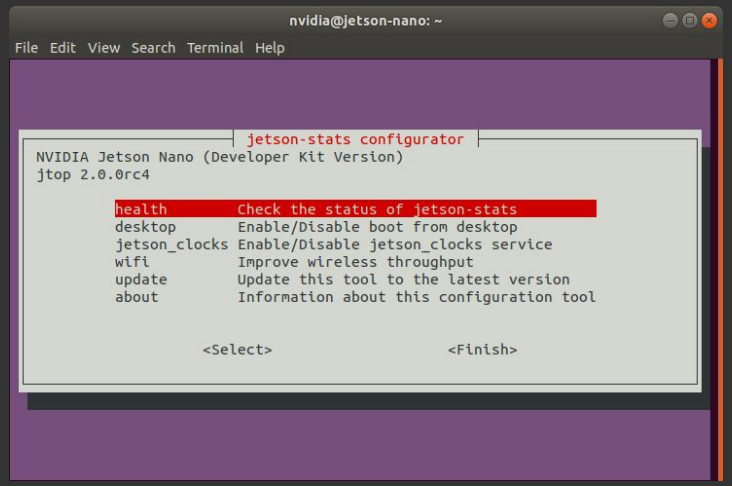
https://pypi.org/project/jetson-stats/

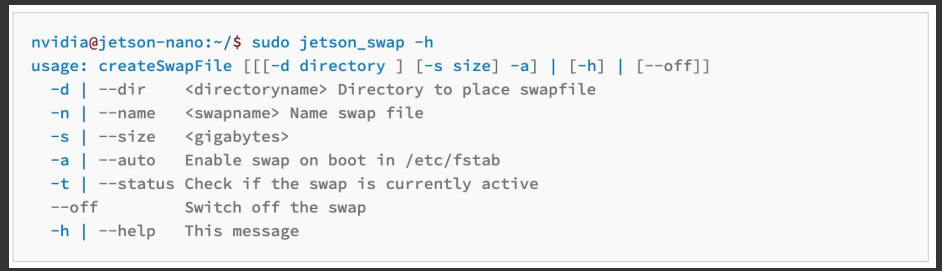
jetson-stats (2/2)

Altri tools inclusi

- jetson_config
  - Configurazione scheda
- Jetson_release
  - Informazioni scheda
- Jetson_swap
  - Abilitazione swap

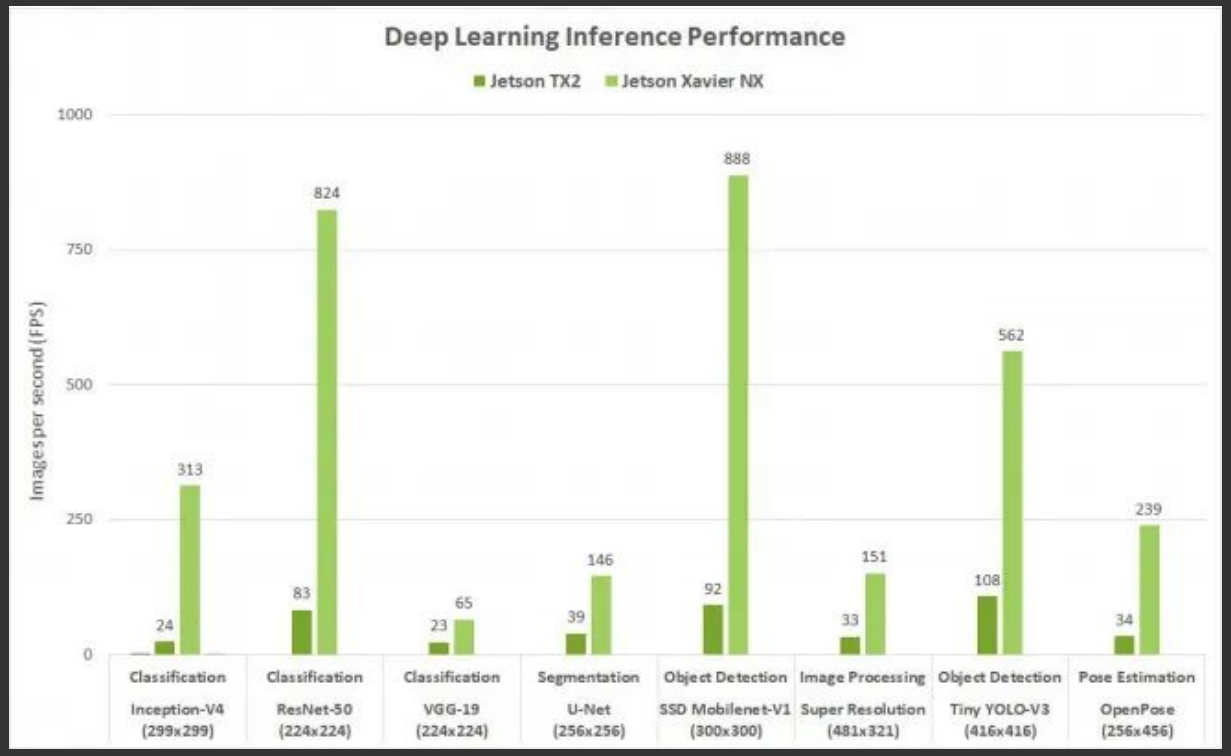






NVIDIA Jetson Xavier NX

Deep Learning Inference Performance



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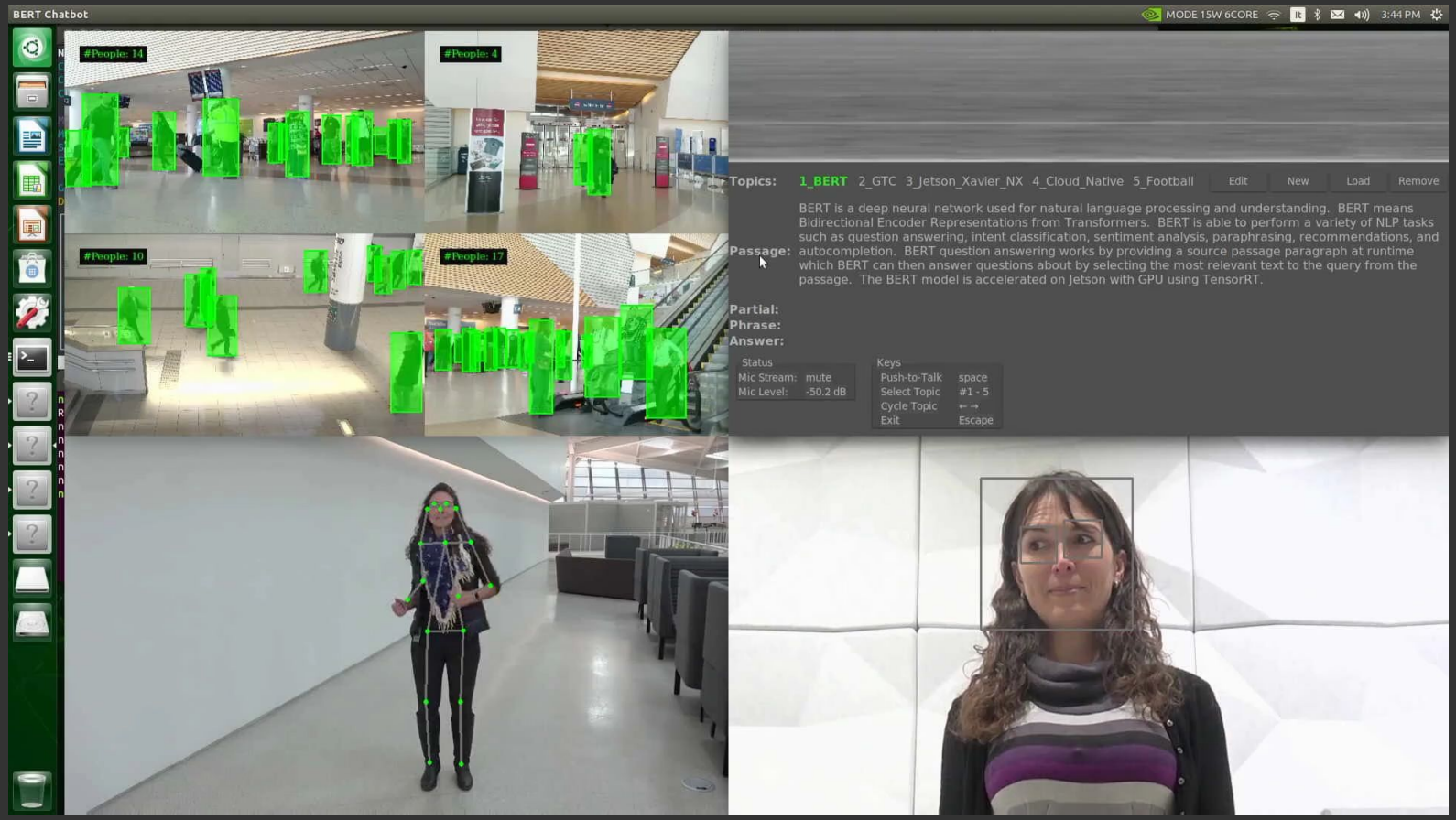
Cloud Native

4 containers attivi nello stesso momento



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Jetson Xavier NX

Costo e dove comprarla

- Jetson Xavier NX
  - 429€
- Jetson Nano
  - 109€

https://www.nvidia.com/it-it/autonomous-machines/embedded-systems/jetson-xavier-nx/

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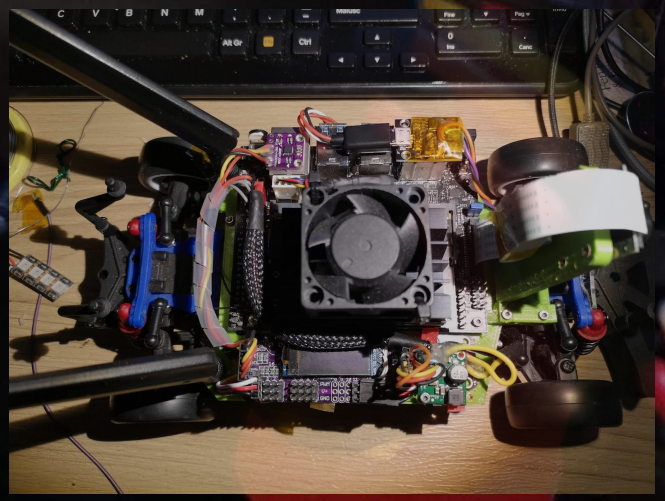
JetRacer & DonkeyCar



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Alessio Morale

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Question & Answer

Recensione NVIDIA Jetson Xavier NX
https://www.rnext.it/review/jetson-xavier-nx

Canale

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