

Demonstration for Promotion of Deep Learning

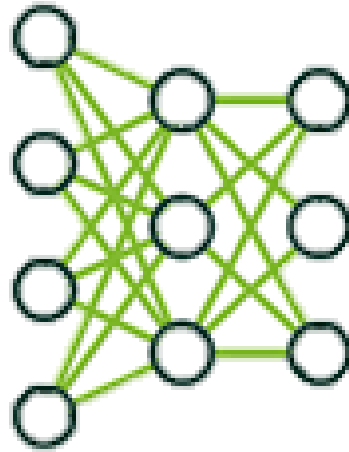
Understanding of Deep Learning is not complete yet...
Some might say...

Blind opinion

Deep Learning is
a magic wand
that can do anything!



Deep Learning



Skeptical opinion

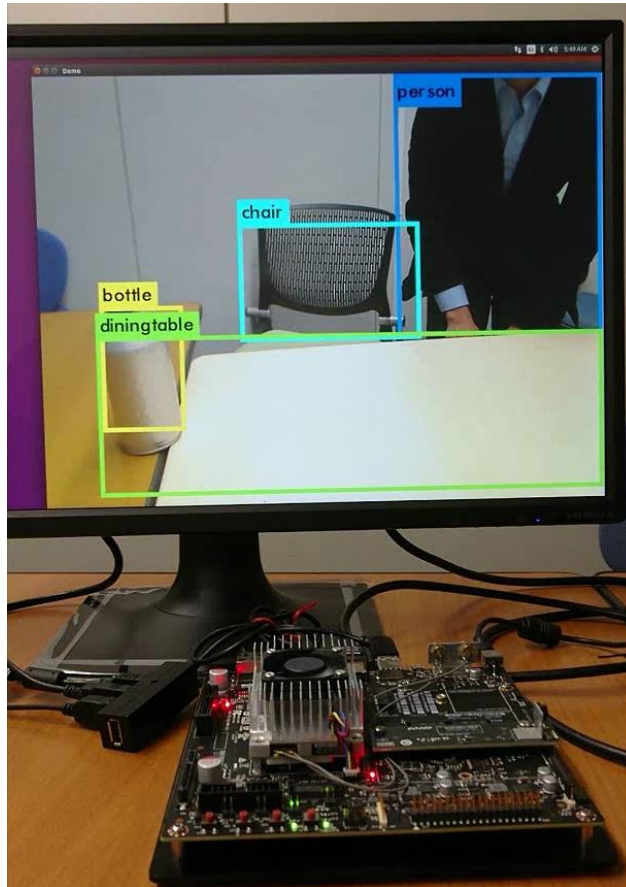
Is it a really
good technique?



We want to disseminate
accurate information about Deep Learning !



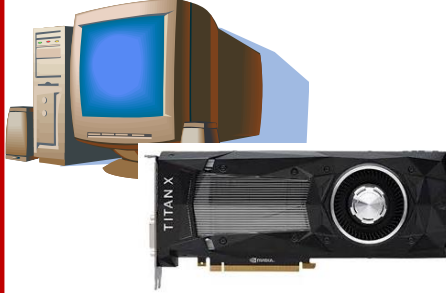

Let's demonstrate with Jetson.

That's right, Seeing is believing !



We believe that Jetson is the best device to disseminate Deep Learning's actual performance.

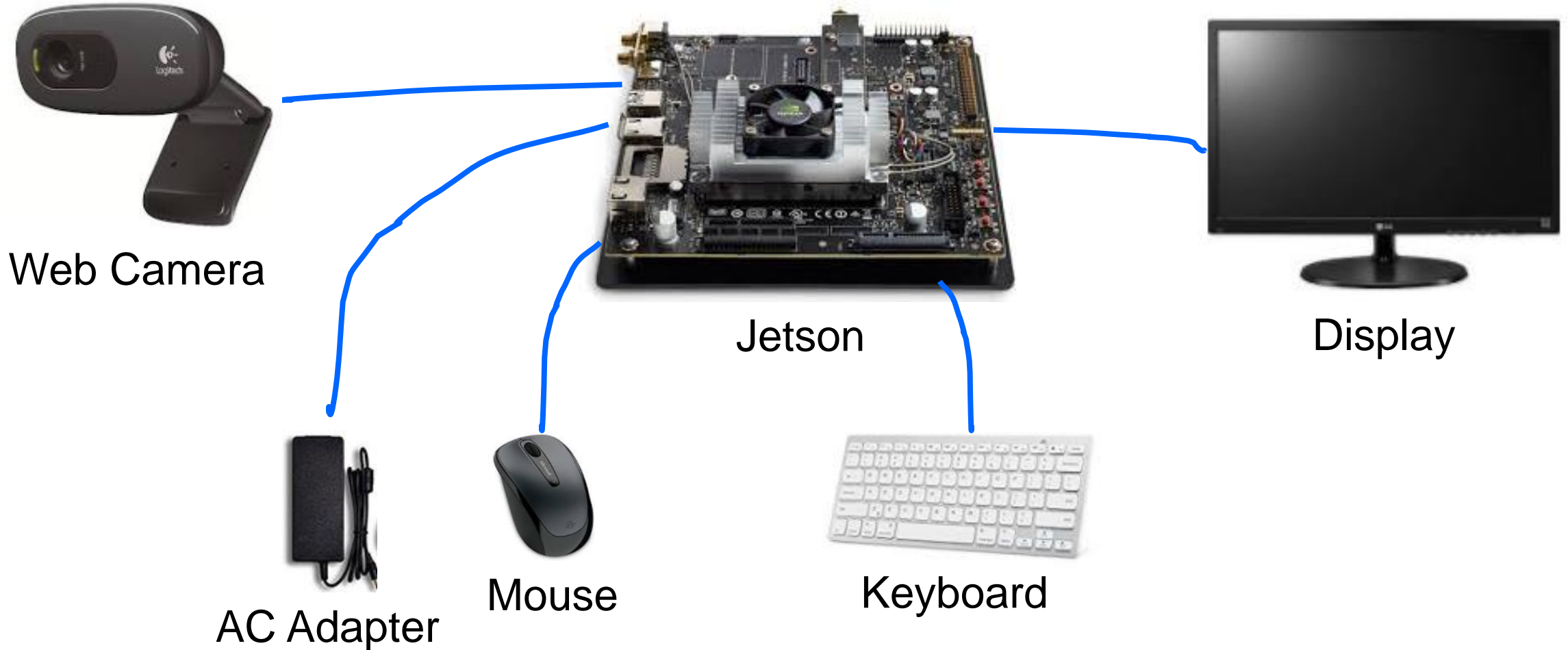
Why is Jetson good?

	Raspberry Pi	FPGA	PC + GPU	Jetson
				
FLOPS	Low	High	High	Middle
Weight	Light	Light	Heavy	Light
Programming Difficulty	Easy	Hard	Easy	Easy

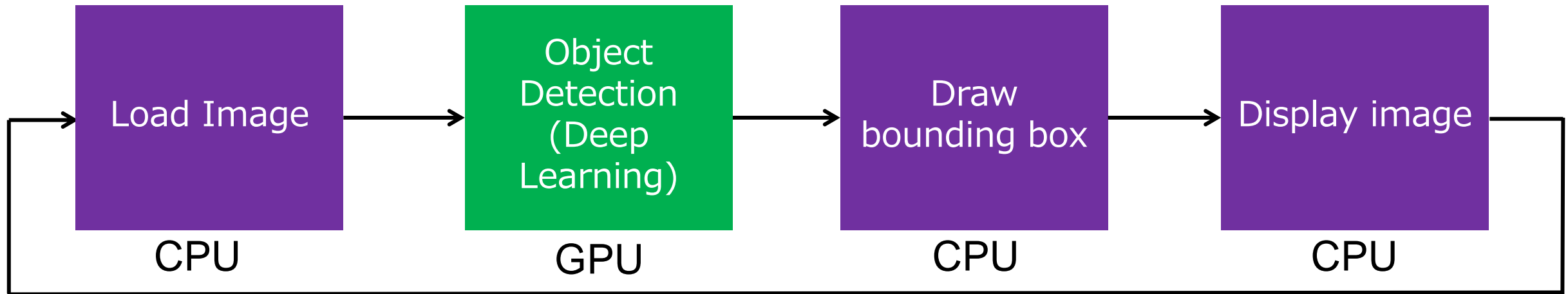
Jetson is well-balanced and excellent .

HW Architecture

It's very simple as we just prepare these.



SW Architecture

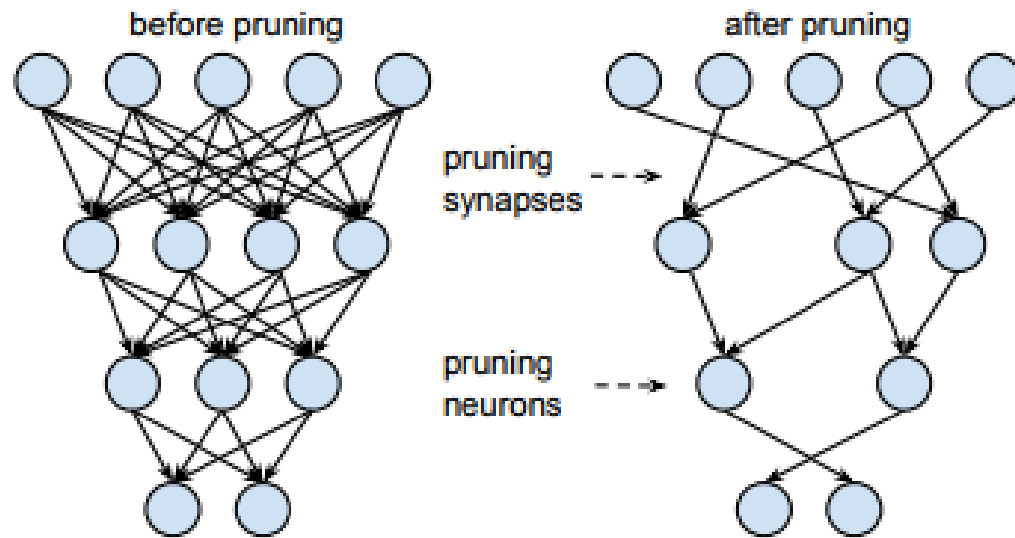


Jetson has a built-in **CPU and GPU**,
It is easy to build a demonstration environment of Deep Learning.

For a better demonstration

We worked on speeding up to make the demonstration more comfortable.
So we applied these two methods.

pruning



<https://arxiv.org/pdf/1506.02626.pdf>

TensorRT



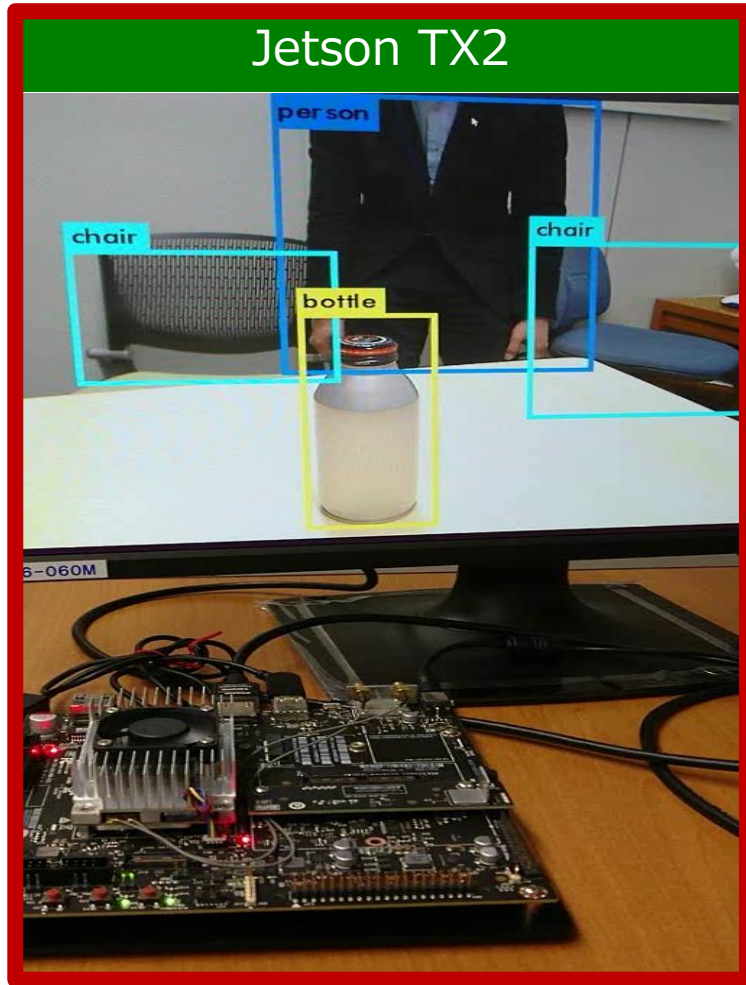
**Optimized
Inference
Engine**

<https://developer.nvidia.com/tensorrt>

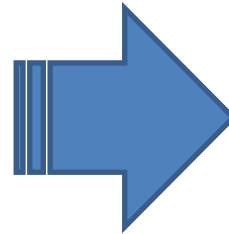
Result

algorithm : YOLO v2 (<https://github.com/pjreddie/darknet>)

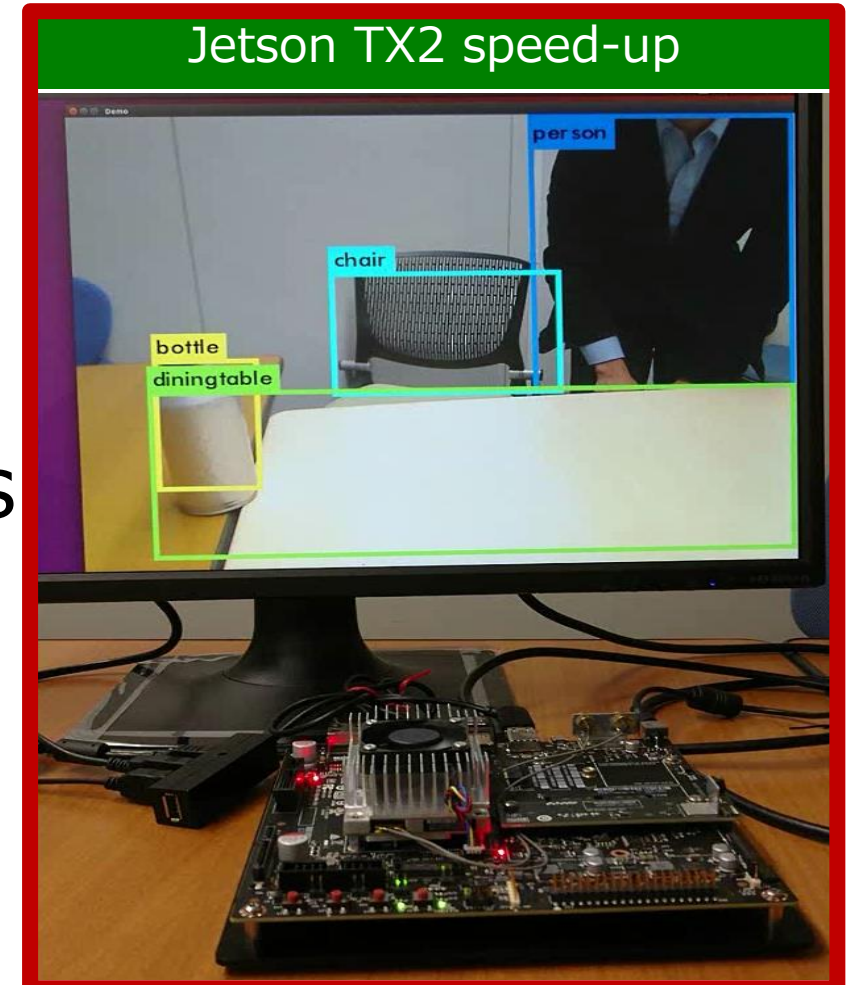
training data : Pascal VOC (<http://host.robots.ox.ac.uk/pascal/VOC/>)



5fps



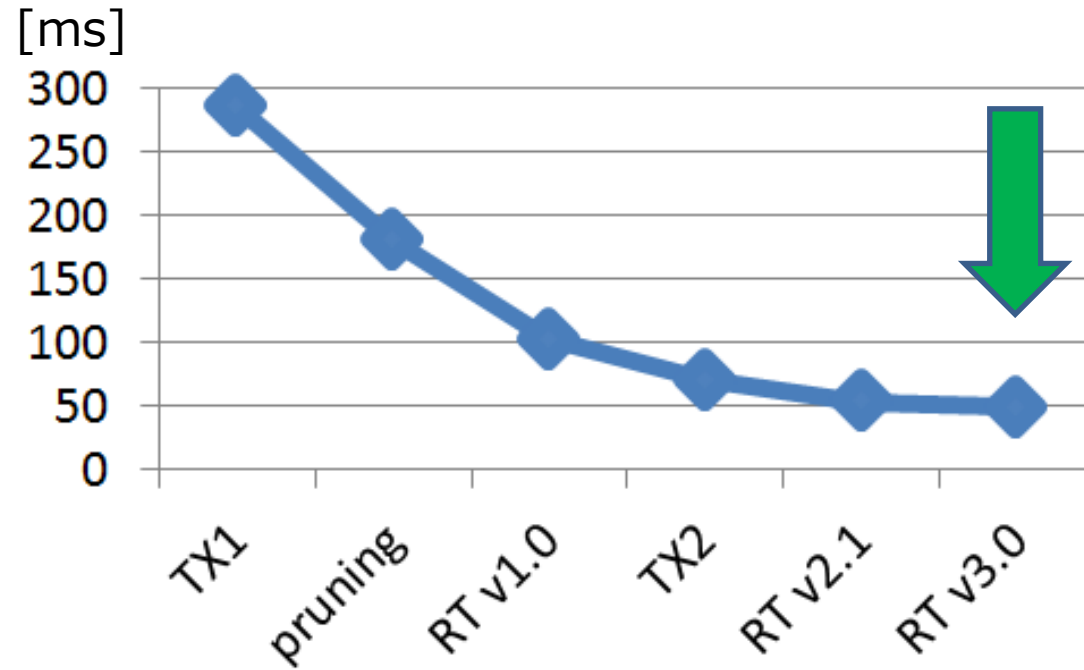
11fps



We are accelerating the promotion of Deep Learning by demonstrating various algorithms we're investigating.

Speed-up of algorithms for product.

we are also considering algorithms for products with Jetson.



- 5x speed-up
- no degradation of Accuracy

Further speed-up !



TensorRT upgrade
Xavier released

Speed-up by **SW**

Speed-up by **HW**

We can get speed-up **Only by waiting.**

That is wonderful !!

Future prospects

Examination

Demonstration

Product

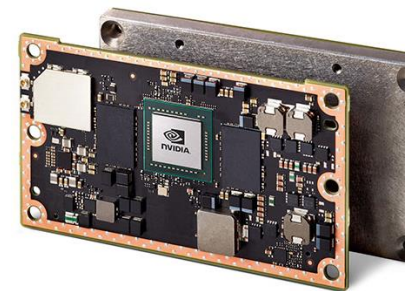
Tesla



Jetson



Tegra



If you do development with this procedure
the source code is almost unchanged

We would like to promote product development
in a short time by utilizing Jetson.