Pose\_And\_Object\_Classification (NVIDIA)

# Reference

YOLO v4

<https://github.com/AlexeyAB/darknet>

Scaled YOLO v4

<https://alexeyab84.medium.com/scaled-yolo-v4-is-the-best-neural-network-for-object-detection-on-ms-coco-dataset-39dfa22fa982?source=friends_link&sk=c8553bfed861b1a7932f739d26f487c8>

Metropolis Documentation

<https://docs.nvidia.com/metropolis/index.html>

# Environment Version

Ubuntu : 18.04

Python : 3.6.9

CUDA : 10.2

cuDNN : 8.0

Pytorch : 1.7.1

JetPack : 4.5.1

TensorRT : 7.1.3

# Pose Estimation

<https://developer.nvidia.com/blog/creating-a-human-pose-estimation-application-with-deepstream-sdk/>

# Object Detection

<https://github.com/marcoslucianops/DeepStream-Yolo>

# Face Recognition

* 1. 需要把臉部偵測當第一個標籤位置0，因為DeepStream SDK是使用Iterate user metadata in object to search SGIE's tensor data方式嵌入編碼。
  2. FaceNet Script

<https://github.com/nwesem/mtcnn_facenet_cpp_tensorRT/tree/develop>

* 1. FaceNet Onnx模型轉換，TensorRT則以deepstream生成

<https://github.com/riotu-lab/deepstream-facenet>

# Pose Estimation & Object Detection

<https://forums.developer.nvidia.com/t/integrated-deepstream-pose-estimation-into-deepstream-app-with-smalll-display-issue/160620>

## DataSet

### COCO

<https://chtseng.wordpress.com/2019/12/01/%E5%BE%9Ecoco-dataset%E5%8F%96%E5%87%BA%E7%89%B9%E5%AE%9A%E7%9A%84%E7%89%A9%E4%BB%B6%E6%A8%99%E8%A8%98/>

## Classification Pose

<https://spyjetson.blogspot.com/2019/12/jetsonnano-human-pose-estimation-using.html>

## Path

cd /opt/nvidia/deepstream/deepstream-5.1/sources/apps/sample\_apps/deepstream-app\_yolo\_and\_pose/

## Build

先複製 /opt/nvidia/deepstream/deepstream-5.1/sources/apps/apps-common 到 /opt/nvidia/deepstream/deepstream-5.1/sources/apps/sample\_apps/ 底下，然後貼上Code的資料夾

(x86)

sudo apt-get install libgstreamer1.0-dev

(x86)

sudo apt-get install libgstreamer-plugins-base1.0-dev

sudo apt-get install libjson-glib-dev

sudo apt-get install libgstrtspserver-1.0-dev

CUDA\_VER=10.2 make

CUDA\_VER=10.2 make -C nvdsinfer\_custom\_impl\_Yolo

## Run

./deepstream-app -c deepstream\_app\_config.txt

# Performance

<https://docs.nvidia.com/metropolis/deepstream/dev-guide/text/DS_Performance.html>

# Docker

DeepStream-l4t IoTW

<https://ngc.nvidia.com/catalog/containers/nvidia:deepstream-l4t/tags>

xhost +

sudo docker run --restart=always -it --device /dev/video0 --rm --net=host --runtime nvidia -e DISPLAY=$DISPLAY -w /opt/nvidia/deepstream/deepstream-5.1 -v /tmp/.X11-unix/:/tmp/.X11-unix nvcr.io/nvidia/deepstream-l4t:5.1-21.02-base

docker cp /opt/nvidia/deepstream/deepstream-5.1/sources/apps/sample\_apps/apps-common/ 628f50f8de63:/opt/nvidia/deepstream/deepstream-5.1/sources/apps/sample\_apps/

docker cp /opt/nvidia/deepstream/deepstream-5.1/sources/apps/sample\_apps/deepstream-app\_yolo\_and\_pose/ 628f50f8de63:/opt/nvidia/deepstream/deepstream-5.1/sources/apps/sample\_apps/

./deepstream-app -c deepstream\_app\_config.txt

# Startup AutoStart DeepStream

<https://blog.csdn.net/u010168781/article/details/102464156>

因為DeepStream是GUI程式，無法使用rc.local

gnome-session-properties

/opt/nvidia/deepstream/deepstream-5.1/sources/apps/sample\_apps/deepstream-app\_yolo\_and\_pose/start.sh

or

/opt/nvidia/deepstream/deepstream-5.1/sources/apps/sample\_apps/deepstream-app\_yolo\_and\_pose/start\_docker.sh

# SSH Remove DeepStream Process

cd /opt/nvidia/deepstream/deepstream-5.1/sources/apps/sample\_apps/deepstream-app\_yolo\_and\_pose

./deepstream-app -c deepstream\_app\_config.txt

or

<https://codes.bobi.tw/archives/60>

ps aux | grep deepstream

kill [ID]

or

killall deepstream-app

# DateTime

sudo apt-get install ntpdate

sudo ntpdate time.stdtime.gov.tw

sudo nano /etc/systemd/timesyncd.conf

add

NTP=time.stdtime.gov.tw

# Recovery Mode

1. Power down the device. If connected, remove the AC adapter from the device.

The device MUST be powered OFF, not in suspend or sleep mode.

2. Connect the Micro-USB plug on the USB cable to the Recovery Port on the

BOXER-8221AI and the other end to an available USB port on the host PC.

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3. Press and hold the FORCE RECOVERY button. FORCE RECOVERY button is

highlighted.

4. While holding the FORCE RECOVERY button, connect the power adapter.

Continue to hold the FORCE RECOVERY button for two seconds, then release.

5. When device is in recovery mode, lsusb command on host PC will list a line of

"NVidia Corp"

# DeepStream / NGC / Kubernetes / EGX

<https://developer.nvidia.com/blog/deploying-ai-apps-with-egx-on-jetson-xavier-nx-microservers/>