Quick Start Demo of SNPE Mobilenet V2 in 6490

Requirement:

1. Ubuntu 20.04
2. Python 3.8 and Virtual Environment
3. Finished installation of SNPE

Steps:

1. Download the mobilenet_v2_1.4_224_frozen.pb.
2. Activate SNPE virtual environment.

```
source snpe/bin/activate
source /opt/qcom/aistack/snpe/2.19.0.240124/bin/envsetup.sh
```

3. Copy image files from SNPE examples

```
cp -r ${SNPE_ROOT}/examples/Models/inception_v3/data/*.jpg .
```

4. Convert Model to DLC

```
snpe-tensorflow-to-dlc --input_network mobilenet_v2_1.4_224_frozen.pb \
    -d 'input' 1,224,224,3 \
    --out_node MobilenetV2/Predictions/Reshape_1 \
    -o mbv2.dlc
```

5. Write a Python script for generating model raw data for quantization. The below script also generate image list called "img_list.txt" for storing the location of input raw file.

   *Note : Image list text file template be found in
   /opt/qcom/aistack/snpe/2.19.0.240124/docs/SNPE/html/general/tools.html#snpe-dlc-quantize

   gen_raw.py

```
import cv2
import numpy as np
import glob

img_list = glob.glob("./*.jpg")

f = open("img_list.txt","w")
f.write("%MobilenetV2/Predictions/Reshape_1:0\n")
for img_path in img_list:
    img_name = img_path.split("/")[-1].replace(".jpg","")
    img = cv2.imread(img_path)
    img = cv2.resize(img[:,:,::-1], (224,224))
    img = (np.float32(img) - 127.5) / 127.5

    output_raw_path = img_name + ".raw"
    img.astype(np.float32).tofile(output_raw_path)
    f.write("input:="+output_raw_path+"\n")
f.close()
```

Run gen_raw.py

```
python gen_raw.py
```

The img_list.txt should look like this

```
%MobilenetV2/Predictions/Reshape_1
input:=plastic_cup.raw
```

6. Quantize Model

```
snpe-dlc-quantize --input_dlc mbv2.dlc \
  --input_list img_list.txt \
  --use_enhanced_quantizer \
  --use_adjusted_weights_quantizer \
  --optimizations cle --axis_quant \
  --enable_htp --htp_socs sm7325 --override_params \
  --act_bitwidth 8 --weights_bitwidth 8
```

7. Create Graph Prepared DLC

```
snpe-dlc-graph-prepare --input_dlc mbv2_quantized.dlc \
  --output_dlc mbv2_quantized_cached.dlc \
  --htp_socs sm7325 --overwrite_cache_records
```