TF faster-rcnn 开发环境配置和demo使用说明

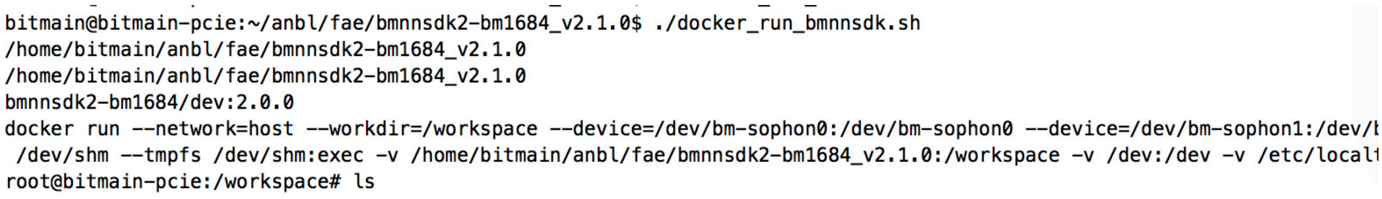
一 . 开发环境配置

1）加载docker镜像（一次性的操作）

sudo docker load -i bmnnsdk2-bm1684_v2.0.0.docker

2）进入docker环境

进入sdk目录后，执行./docker_run_bmnnsdk.sh，即可进入docker环境



```
bitmain@bitmain-pcie:~/anbl/fae/bmnnsdk2-bm1684_v2.1.0$ ./docker_run_bmnnsdk.sh
/home/bitmain/anbl/fae/bmnnsdk2-bm1684_v2.1.0
/home/bitmain/anbl/fae/bmnnsdk2-bm1684_v2.1.0
bmnnsdk2-bm1684/dev:2.0.0
docker run --network=host --workdir=/workspace --device=/dev/bm-sophon0:/dev/bm-sophon0 --device=/dev/bm-sophon1:/dev/b
 /dev/shm --tmpfs /dev/shm:exec -v /home/bitmain/anbl/fae/bmnnsdk2-bm1684_v2.1.0:/workspace -v /dev:/dev -v /etc/localt
root@bitmain-pcie:/workspace# ls
```

3）安装lib（一次性的操作）

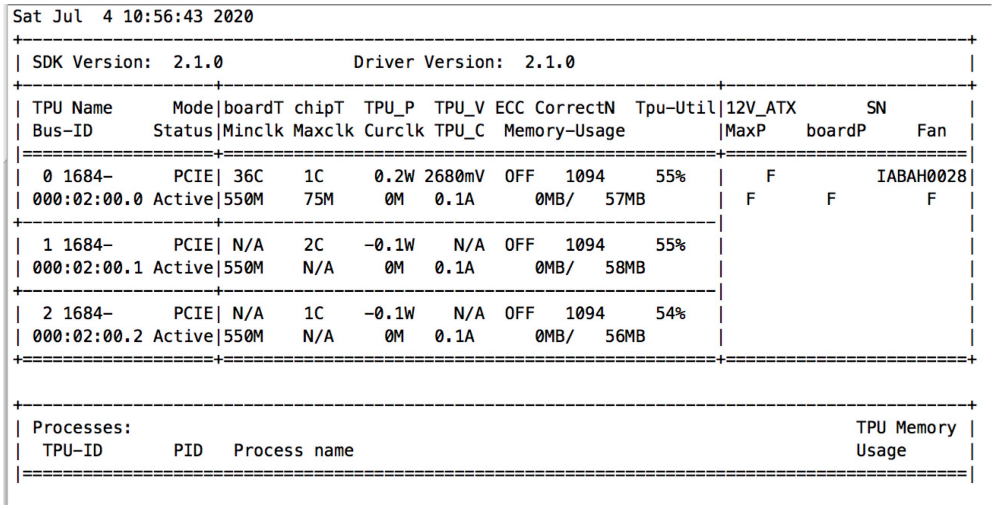
cd scripts/
./install_lib.sh nntc

4) 执行环境配置脚本

source envsetup_pcie.sh

5）其它一些常用工具

a) bm-smi : 可以查看卡的状态（温度、TPU占用率、内存占用率）

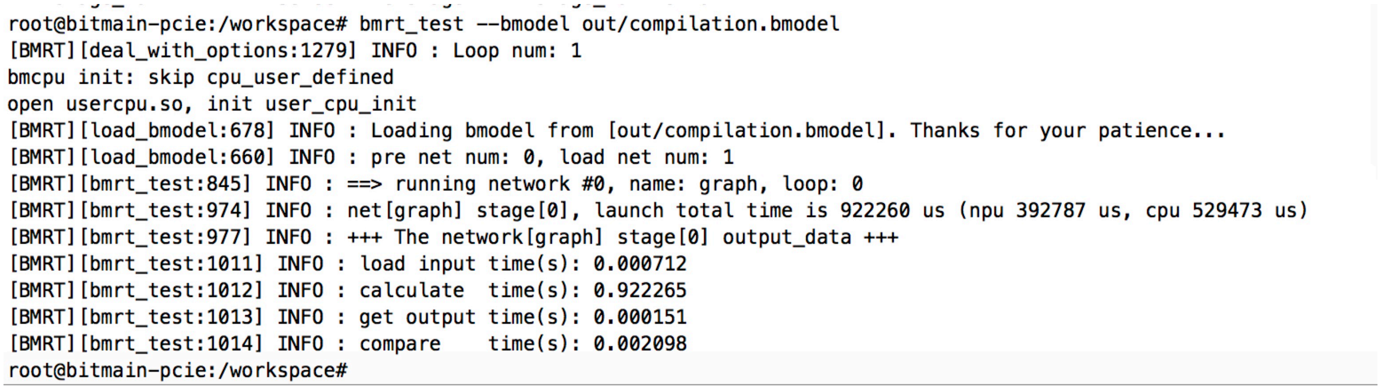


```
Sat Jul  4 10:56:43 2020
+--------------------------------------------------------------------------------------+
| SDK Version:  2.1.0            Driver Version:  2.1.0                                |
+------------------+-------------------------------------------+-----------------------+
| TPU Name      Mode|boardT chipT  TPU_P  TPU_V ECC CorrectN  Tpu-Util|12V_ATX       SN     |
| Bus-ID      Status|Minclk Maxclk Curclk TPU_C  Memory-Usage         |MaxP    boardP     Fan |
|==================+===========================================+=======================|
|  0 1684-      PCIE| 36C     1C     0.2W 2680mV  OFF    1094      55%  |    F          IABAH0028|
| 000:02:00.0 Active|550M    75M      0M   0.1A       0MB/   57MB      |  F        F          F  |
+------------------+-------------------------------------------|                       |
|  1 1684-      PCIE| N/A     2C    -0.1W     N/A  OFF    1094      55%  |                       |
| 000:02:00.1 Active|550M    N/A      0M   0.1A       0MB/   58MB      |                       |
+------------------+-------------------------------------------|                       |
|  2 1684-      PCIE| N/A     1C    -0.1W     N/A  OFF    1094      54%  |                       |
| 000:02:00.2 Active|550M    N/A      0M   0.1A       0MB/   56MB      |                       |
+==================+===========================================+=======================+


+--------------------------------------------------------------------------------------+
| Processes:                                                               TPU Memory |
|  TPU-ID       PID   Process name                                         Usage      |
|======================================================================================|
```

b) bmrt_test ： 可以用来验证模型是否正确

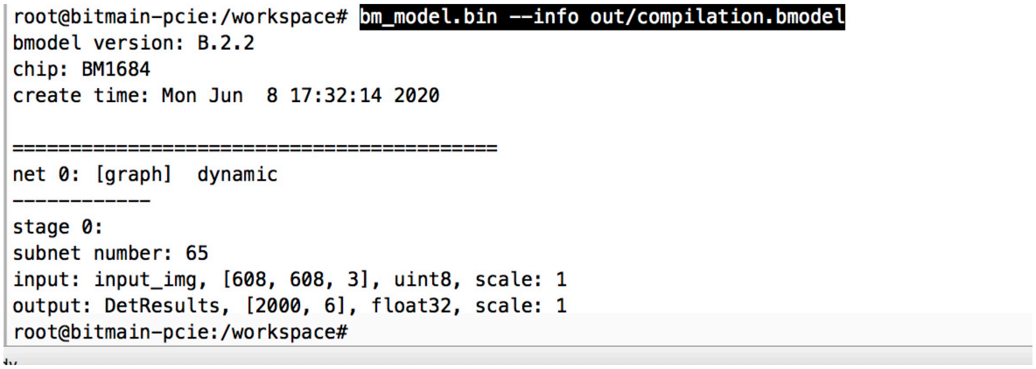
bmrt_test --bmodel out/compilation.bmodel



```
root@bitmain-pcie:/workspace# bmrt_test --bmodel out/compilation.bmodel
[BMRT][deal_with_options:1279] INFO : Loop num: 1
bmcpu init: skip cpu_user_defined
open usercpu.so, init user_cpu_init
[BMRT][load_bmodel:678] INFO : Loading bmodel from [out/compilation.bmodel]. Thanks for your patience...
[BMRT][load_bmodel:660] INFO : pre net num: 0, load net num: 1
[BMRT][bmrt_test:845] INFO : ==> running network #0, name: graph, loop: 0
[BMRT][bmrt_test:974] INFO : net[graph] stage[0], launch total time is 922260 us (npu 392787 us, cpu 529473 us)
[BMRT][bmrt_test:977] INFO : +++ The network[graph] stage[0] output_data +++
[BMRT][bmrt_test:1011] INFO : load input time(s): 0.000712
[BMRT][bmrt_test:1012] INFO : calculate  time(s): 0.922265
[BMRT][bmrt_test:1013] INFO : get output time(s): 0.000151
[BMRT][bmrt_test:1014] INFO : compare    time(s): 0.002098
root@bitmain-pcie:/workspace#
```

c) bm_model.bin 查看模型信息

bm_model.bin --info out/compilation.bmodel



```
root@bitmain-pcie:/workspace# bm_model.bin --info out/compilation.bmodel
bmodel version: B.2.2
chip: BM1684
create time: Mon Jun  8 17:32:14 2020

==========================================
net 0: [graph]  dynamic
------------
stage 0:
subnet number: 65
input: input_img, [608, 608, 3], uint8, scale: 1
output: DetResults, [2000, 6], float32, scale: 1
root@bitmain-pcie:/workspace#
```

二 ． demo编译和使用

1) 进入demo目录

cd /workspace/examples/Faster_rcnn/tf_fasterrcnn_detection_demo

2) 编译

make -f Makefile.pcie

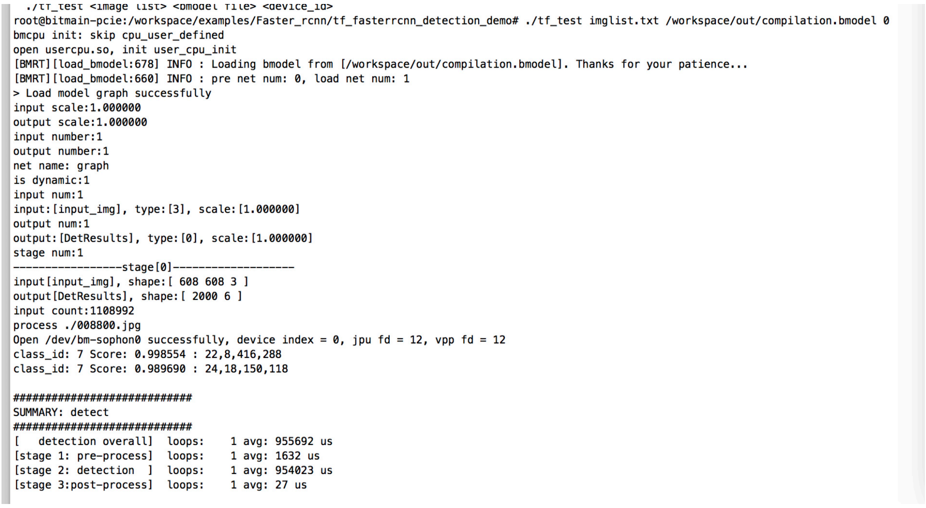
3) 运行

./tf_test imglist.txt /workspace/out/compilation.bmodel 0

参数1 ： imglist.txt 图片路径list，每一行是一个图片的路径

参数2 : 模型路径

参数3: 芯片ID



```
  ./tf_test <image list> <bmodel file> <device_id>
root@bitmain-pcie:/workspace/examples/Faster_rcnn/tf_fasterrcnn_detection_demo# ./tf_test imglist.txt /workspace/out/compilation.bmodel 0
bmcpu init: skip cpu_user_defined
open usercpu.so, init user_cpu_init
[BMRT][load_bmodel:678] INFO : Loading bmodel from [/workspace/out/compilation.bmodel]. Thanks for your patience...
[BMRT][load_bmodel:660] INFO : pre net num: 0, load net num: 1
> Load model graph successfully
input scale:1.000000
output scale:1.000000
input number:1
output number:1
net name: graph
is dynamic:1
input num:1
input:[input_img], type:[3], scale:[1.000000]
output num:1
output:[DetResults], type:[0], scale:[1.000000]
stage num:1
-----------------stage[0]-------------------
input[input_img], shape:[ 608 608 3 ]
output[DetResults], shape:[ 2000 6 ]
input count:1108992
process ./008800.jpg
Open /dev/bm-sophon0 successfully, device index = 0, jpu fd = 12, vpp fd = 12
class_id: 7 Score: 0.998554 : 22,8,416,288
class_id: 7 Score: 0.989690 : 24,18,150,118

############################
SUMMARY: detect
############################
[   detection overall]  loops:    1 avg: 955692 us
[stage 1: pre-process]  loops:    1 avg: 1632 us
[stage 2: detection  ]  loops:    1 avg: 954023 us
[stage 3:post-process]  loops:    1 avg: 27 us
```

4) 在执行目录先会自动生成result_imgs文件夹，里面保存的是检测结果图片