电 子 科 技 大 学

实 验 报 告

学生姓名：	学 号：

一、实验室名称：主楼 A2-412

二、实验项目名称：华为昇腾计算卡推理实验

三、实验内容：

使用华为昇腾 310 推理卡推理一个神经网络模型。

四、实验器材（环境配置）：

架构：AI 加速型

规格镜像：8vCPUs | 8GiB | kai1s.2xlarge.1

Ubuntu 18.04 server 64bit for Kai1s

评测机器可用区：华南广州，可用区 6

五、实验步骤及操作：

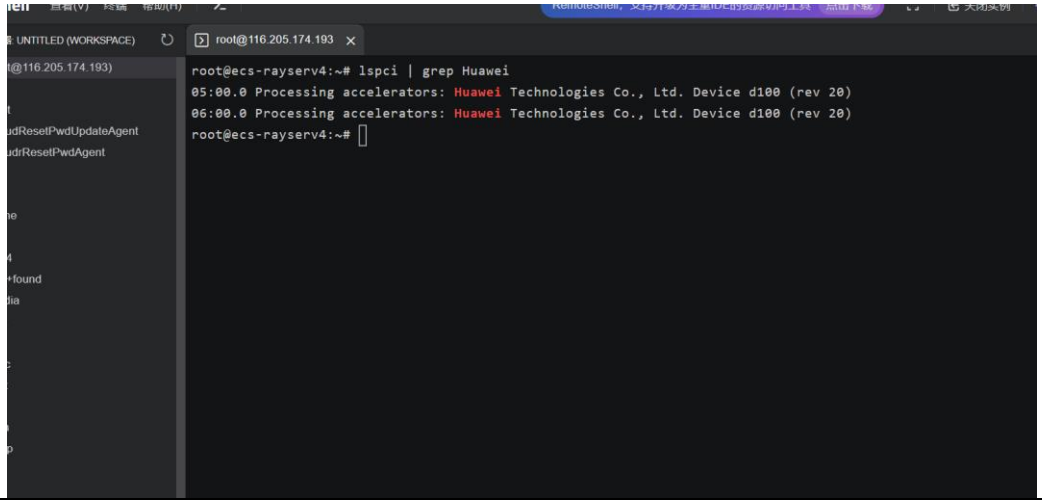
进行实验之前，按照如上环境配置和实验指导书上的要求购买华为云服务器。

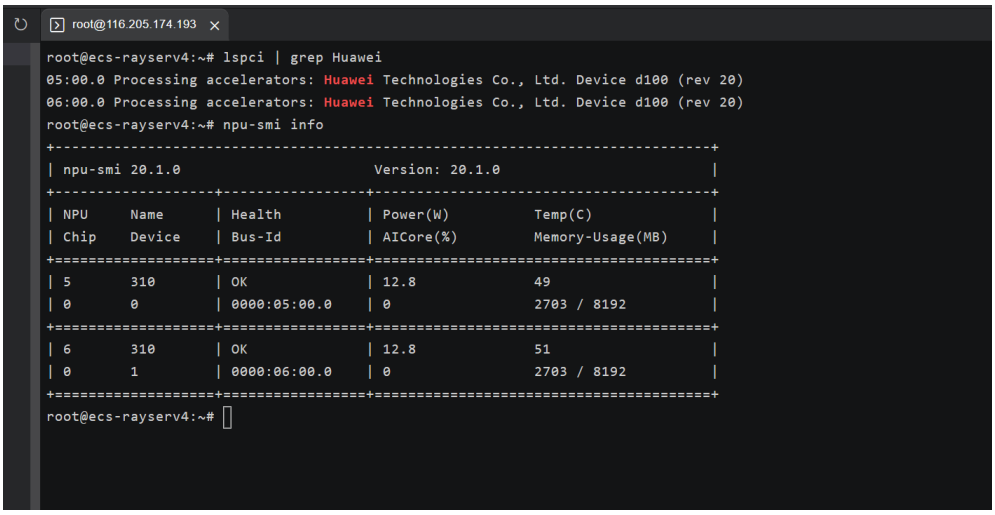
驱动、CANN、固件的版本匹配和安装

第一步：检查硬件

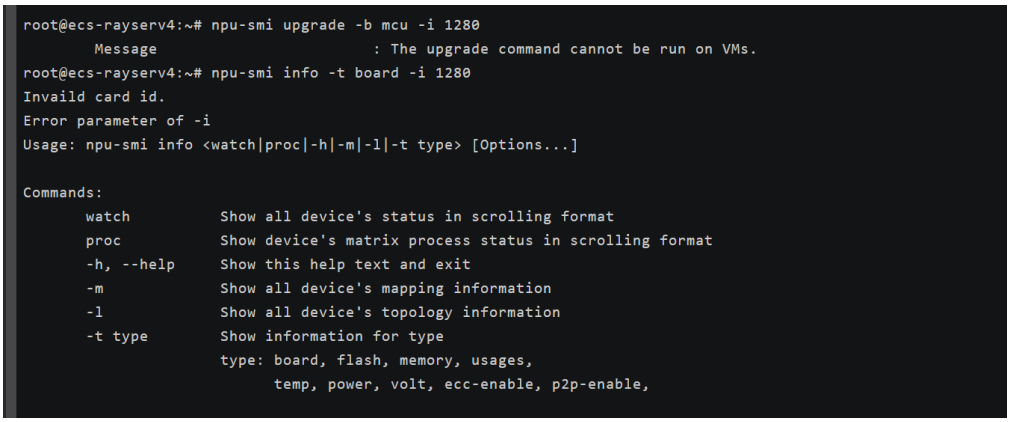
运行如下命令：

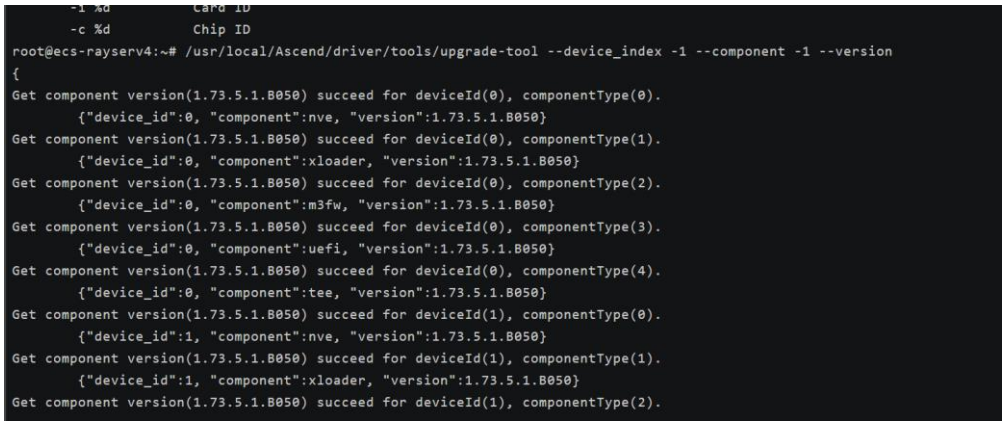
```
lspci | grep Huawei
npu-smi info
```





第二步：识别固件版本和安装固件（虚拟机跳过）





可以看到虚拟机内固件版本是 1.73.5.1

第三步：安装驱动和 CANN

将驱动的下载链接复制并下载到服务器：

wget https://ascend-repo.obs.cn-east-2.myhuaweicloud.com/Ascend%20HDK/Ascend%20HDK%2023.0.0/A300-3000-npu-driver_23.0.0_linux-aarch64.run --no-check-certificate

wget https://ascend-repo.obs.cn-east-2.myhuaweicloud.com/CANN/CANN%207.0.0/Ascend-cann-toolkit_7.0.0_linux-aarch64.run --no-check-certificate

```
root@ecs-rayserv4:~# wget https://ascend-repo.obs.cn-east-2.myhuaweicloud.com/Ascend%20HDK/Ascend%20HDK%2023.0.0/A300-3000-
npu-driver_23.0.0_linux-aarch64.run --no-check-certificate
--2024-05-18 12:47:31--  https://ascend-repo.obs.cn-east-2.myhuaweicloud.com/Ascend%20HDK/Ascend%20HDK%2023.0.0/A300-3000-n
pu-driver_23.0.0_linux-aarch64.run
Resolving ascend-repo.obs.cn-east-2.myhuaweicloud.com (ascend-repo.obs.cn-east-2.myhuaweicloud.com)... 122.9.88.9, 122.9.88
.11, 122.9.88.13, ...
Connecting to ascend-repo.obs.cn-east-2.myhuaweicloud.com (ascend-repo.obs.cn-east-2.myhuaweicloud.com)|122.9.88.9|:443...
connected.
WARNING: cannot verify ascend-repo.obs.cn-east-2.myhuaweicloud.com's certificate, issued by 'CN=GlobalSign RSA OV SSL CA 20
18,O=GlobalSign nv-sa,C=BE':
  Self-signed certificate encountered.
HTTP request sent, awaiting response... 200 OK
Length: 107463604 (102M) [application/octet-stream]
Saving to: 'A300-3000-npu-driver_23.0.0_linux-aarch64.run'

A300-3000-npu-driver_23.0.0_li 100%[================================================>] 102.48M  53.0MB/s    in 1.9s

2024-05-18 12:47:33 (53.0 MB/s) - 'A300-3000-npu-driver_23.0.0_linux-aarch64.run' saved [107463604/107463604]

root@ecs-rayserv4:~#
```

```
root@ecs-rayserv4:~# wget https://ascend-repo.obs.cn-east-2.myhuaweicloud.com/CANN/CANN%207.0.0/Ascend-cann-toolkit_7.0.0_l
inux-aarch64.run --no-check-certificate
--2024-05-18 12:48:28--  https://ascend-repo.obs.cn-east-2.myhuaweicloud.com/CANN/CANN%207.0.0/Ascend-cann-toolkit_7.0.0_li
nux-aarch64.run
Resolving ascend-repo.obs.cn-east-2.myhuaweicloud.com (ascend-repo.obs.cn-east-2.myhuaweicloud.com)... 122.9.88.9, 122.9.88
.11, 122.9.88.13, ...
Connecting to ascend-repo.obs.cn-east-2.myhuaweicloud.com (ascend-repo.obs.cn-east-2.myhuaweicloud.com)|122.9.88.9|:443...
connected.
WARNING: cannot verify ascend-repo.obs.cn-east-2.myhuaweicloud.com's certificate, issued by 'CN=GlobalSign RSA OV SSL CA 20
18,O=GlobalSign nv-sa,C=BE':
  Self-signed certificate encountered.
HTTP request sent, awaiting response... 200 OK
Length: 1621947145 (1.5G) [application/octet-stream]
Saving to: 'Ascend-cann-toolkit_7.0.0_linux-aarch64.run'

Ascend-cann-toolkit_7.0.0_linu 100%[================================================>]   1.51G  34.9MB/s    in 39s

2024-05-18 12:49:07 (39.7 MB/s) - 'Ascend-cann-toolkit_7.0.0_linux-aarch64.run' saved [1621947145/1621947145]

root@ecs-rayserv4:~#
```

安装方法：先 chmod +x 添加权限

chmod +x A300-3000-npu-driver_23.0.0_linux-aarch64.run Ascend-cann-toolkit_7.0.0_linux-aarch64.run

然后./执行，需要带参数 --full 或者 --install

./A300-3000-npu-driver_23.0.0_linux-aarch64.run --full

./Ascend-cann-toolkit_7.0.0_linux-aarch64.run --install

```
root@ecs-rayserv4:~# chmod +x A300-3000-npu-driver_23.0.0_linux-aarch64.run Ascend-cann-toolkit_7.0.0_linux-aarch64.run
root@ecs-rayserv4:~# ./A300-3000-npu-driver_23.0.0_linux-aarch64.run --full
Verifying archive integrity...  100%   SHA256 checksums are OK. All good.
Uncompressing ASCEND DRIVER RUN PACKAGE  100%
[Driver] [2024-05-18 12:50:12] [INFO]Start time: 2024-05-18 12:50:12
[Driver] [2024-05-18 12:50:12] [INFO]LogFile: /var/log/ascend_seclog/ascend_install.log
[Driver] [2024-05-18 12:50:12] [INFO]OperationLogFile: /var/log/ascend_seclog/operation.log
[Driver] [2024-05-18 12:50:12] [INFO]base version is 20.1.0.
[Driver] [2024-05-18 12:50:12] [WARNING]Do not power off or restart the system during the installation/upgrade
[Driver] [2024-05-18 12:50:12] [INFO]set username and usergroup, HwHiAiUser:HwHiAiUser
[Driver] [2024-05-18 12:50:13] [INFO]Driver package has been installed on the path /usr/local/Ascend, the version is 20.1.0
, and the version of this package is 23.0.0,do you want to continue?  [y/n]
y
deleting install files...
remove install files successfully!
deleting installed folders...
remove install folders successfully!
[Driver] [2024-05-18 12:50:50] [INFO]driver install type: DKMS
[Driver] [2024-05-18 12:50:50] [INFO]upgradePercentage:10%
[Driver] [2024-05-18 12:50:52] [INFO]upgradePercentage:30%
```

```
root@ecs-rayserv4:~# ./Ascend-cann-toolkit_7.0.0_linux-aarch64.run --install
Verifying archive integrity...  100%   SHA256 checksums are OK. All good.
Uncompressing ASCEND_RUN_PACKAGE  100%
[Toolkit] [20240518-12:53:33] [INFO] touch /var/log/ascend_seclog/ascend_toolkit_install.log
[Toolkit] [20240518-12:53:33] [INFO] LogFile:/var/log/ascend_seclog/ascend_toolkit_install.log
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egulations of the country/region of purchase. The previous paragraph does not apply where You have expressly agreed to this
 Agreement as part of a transaction between You and the sales entity (Huawei partner, Huawei and/or its Affiliates where Yo
u made the purchase).
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 special ones; ②the software components provided to You with a Huawei device, including but not limited to the codes as wel
l as other embedded software, documents, interfaces, content, fonts, and any data stored on it that is protected by copyrig
```

```
[Toolkit] [20240518-12:56:45] [INFO] install package Ascend-pyACL_7.0.0_linux-aarch64.run start
[Toolkit] [20240518-12:56:45] [INFO] Ascend-pyACL_7.0.0_linux-aarch64.run --full --quiet --nox11 install success
[Toolkit] [20240518-12:56:45] [INFO] install package CANN-ncs-7.1.0.3.220-linux.aarch64.run start
[Toolkit] [20240518-12:56:49] [INFO] CANN-ncs-7.1.0.3.220-linux.aarch64.run --full --quiet --nox11 install success
[Toolkit] [20240518-12:56:49] [INFO] install package Ascend-test-ops_7.0.0_linux.run start
[Toolkit] [20240518-12:56:49] [INFO] Ascend-test-ops_7.0.0_linux.run --full --quiet --nox11 install success
[Toolkit] [20240518-12:56:49] [INFO] The /etc/Ascend/ascend_cann_install.info is written successfully.


===========
= Summary =
===========

Driver:   Installed in /usr/local/Ascend/driver.
Toolkit:  Ascend-cann-toolkit_7.0.0_linux-aarch64 install success, installed in /usr/local/Ascend.

Please make sure that the environment variables have been configured.
-  To take effect for all users, you can add "source /usr/local/Ascend/ascend-toolkit/set_env.sh" to /etc/profile.
-  To take effect for current user, you can exec command below: source /usr/local/Ascend/ascend-toolkit/set_env.sh or add "
source /usr/local/Ascend/ascend-toolkit/set_env.sh" to ~/.bashrc.

root@ecs-rayserv4:~#
```

安装完成后，重启虚拟机

sudo reboot

识别安装结果：

重新使用 ssh 登录后使用 atc 命令：

Atc

```
root@116.205.174.193
root@ecs-rayserv4:~# atc
ATC start working now, please wait for a moment.
...
ATC run failed, Please check the detail log, Try 'atc --help' for more information
E10007: [--framework] is required. The value must be [0(Caffe) or 1(MindSpore) or 3(TensorFlow) or 5(Onnx)].

root@ecs-rayserv4:~#
```

同时，npu-smi info 结果会变化

```
root@ecs-rayserv4:~# npu-smi info
+-------------------------------------------------------------------------------------------+
| npu-smi 23.0.0                                 Version: 23.0.0                            |
+------------------------------+-----------------+------------------------------------------+
| NPU     Name                 | Health          | Power(W)     Temp(C)           Hugepages-Usage(page) |
| Chip    Device               | Bus-Id          | AICore(%)    Memory-Usage(MB)                        |
+==============================+=================+==========================================+
| 1280    310                  | OK              | 12.8         50                0     / 969          |
| 0       0                    | 0000:05:00.0    | 0            576  / 7759                           |
+==============================+=================+==========================================+
| 1536    310                  | OK              | 12.8         52                0     / 969          |
| 0       1                    | 0000:06:00.0    | 0            575  / 7759                           |
+==============================+=================+==========================================+
+------------------------------+-----------------+------------------------------------------+
| NPU     Chip                 | Process id      | Process name             | Process memory(MB)        |
+==============================+=================+==========================================+
| No running processes found in NPU 1280                                                    |
+==============================+=================+==========================================+
| No running processes found in NPU 1536                                                    |
+==============================+=================+==========================================+
root@ecs-rayserv4:~#
```

编译和推理模型（使用 python）

第〇步：测试示例代码

这一步只要可以运行就可以直接 CTRL+C 停止了。

git clone https://gitee.com/ascend/samples.git

cd samples/python/level1_single_api/1_acl/2_memory_management/memcpy_host_device_python/src

python3 memcpy_host_device.py

```
root@ecs-rayserv4:~/samples/python/level1_single_api/1_acl/2_memory_management/memcpy_host_device_python/src# python3 memcp
y_host_device.py
[2024-05-18 13:02:14,739][memcpy_host_device][INFO]>>> Using params are as follows.
  device id : 0
  release cycle : -1
  number of cycles : 1
  memory size : 10485760 Bytes
  write back host : False
  memory_reuse : False

[2024-05-18 13:02:15,918][memcpy_host_device][INFO]>>> At number_of_cycles = 0, release_cycle = 0, DDR free memory:74930339
84 Byte, DDR total memory:8136531968 Byte.
[2024-05-18 13:02:15,919][memcpy_host_device][INFO]>>> At number_of_cycles = 0, release_cycle = 0, HBM free memory:0 Byte,
HBM total memory:0 Byte.
[2024-05-18 13:02:15,931][memcpy_host_device][INFO]>>> At first memset host data is [7 7 7 ... 7 7 7]
[2024-05-18 13:02:15,947][memcpy_host_device][INFO]>>> At memcpy device data is [7 7 7 ... 7 7 7]
[2024-05-18 13:02:16,949][memcpy_host_device][INFO]>>> At number_of_cycles = 0, release_cycle = 1, DDR free memory:74807132
16 Byte, DDR total memory:8136531968 Byte.
[2024-05-18 13:02:16,949][memcpy_host_device][INFO]>>> At number_of_cycles = 0, release_cycle = 1, HBM free memory:0 Byte,
HBM total memory:0 Byte.
[2024-05-18 13:02:16,954][memcpy_host_device][INFO]>>> At first memset host data is [7 7 7 ... 7 7 7]
[2024-05-18 13:02:16,971][memcpy_host_device][INFO]>>> At memcpy device data is [7 7 7 ... 7 7 7]
```

第一步：下载模型代码和权重和示例图片

cd samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification

下载示例图片：

cd data

wget https://obs-9be7.obs.cn-east-2.myhuaweicloud.com/models/aclsample/dog1_1024_683.jpg

wget https://obs-9be7.obs.cn-east-2.myhuaweicloud.com/models/aclsample/dog2_1024_683.jpg

cd ..

```
root@ecs-rayserv4:~/samples/python# ls
common  contrib  environment  level1_single_api  level2_simple_inference  level3_multi_model  README_CN.md  README.md
root@ecs-rayserv4:~/samples/python# cd samples/python/level2_simple_inference
-bash: cd: samples/python/level2_simple_inference: No such file or directory
root@ecs-rayserv4:~/samples/python# cd level2_simple_inference
root@ecs-rayserv4:~/samples/python/level2_simple_inference# cd 1_classification/resnet50_imagenet_classification
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification# cd data
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/data# wget htt
ps://obs-9be7.obs.cn-east-2.myhuaweicloud.com/models/aclsample/dog1_1024_683.jpg
--2024-05-18 13:08:17--  https://obs-9be7.obs.cn-east-2.myhuaweicloud.com/models/aclsample/dog1_1024_683.jpg
Resolving obs-9be7.obs.cn-east-2.myhuaweicloud.com (obs-9be7.obs.cn-east-2.myhuaweicloud.com)... 122.9.88.43
Connecting to obs-9be7.obs.cn-east-2.myhuaweicloud.com (obs-9be7.obs.cn-east-2.myhuaweicloud.com)|122.9.88.43|:443... conne
cted.
HTTP request sent, awaiting response... 200 OK
Length: 35635 (35K) [image/jpeg]
Saving to: 'dog1_1024_683.jpg'

dog1_1024_683.jpg             100%[================================================>]  34.80K  --.-KB/s    in 0.03s

2024-05-18 13:08:17 (1.20 MB/s) - 'dog1_1024_683.jpg' saved [35635/35635]

root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/data#
```

```
Saving to: 'dog1_1024_683.jpg'

dog1_1024_683.jpg             100%[================================================>]  34.80K  --.-KB/s    in 0.03s

2024-05-18 13:08:17 (1.20 MB/s) - 'dog1_1024_683.jpg' saved [35635/35635]

root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/data# wget htt
ps://obs-9be7.obs.cn-east-2.myhuaweicloud.com/models/aclsample/dog2_1024_683.jpg
--2024-05-18 13:08:46--  https://obs-9be7.obs.cn-east-2.myhuaweicloud.com/models/aclsample/dog2_1024_683.jpg
Resolving obs-9be7.obs.cn-east-2.myhuaweicloud.com (obs-9be7.obs.cn-east-2.myhuaweicloud.com)... 122.9.88.43
Connecting to obs-9be7.obs.cn-east-2.myhuaweicloud.com (obs-9be7.obs.cn-east-2.myhuaweicloud.com)|122.9.88.43|:443... conne
cted.
HTTP request sent, awaiting response... 200 OK
Length: 41398 (40K) [image/jpeg]
Saving to: 'dog2_1024_683.jpg'

dog2_1024_683.jpg             100%[================================================>]  40.43K  --.-KB/s    in 0.03s

2024-05-18 13:08:46 (1.21 MB/s) - 'dog2_1024_683.jpg' saved [41398/41398]

root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/data# cd ..
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification#
```

下载模型权重：

mkdir model

cd model

wget https://obs-9be7.obs.cn-east-2.myhuaweicloud.com/003_Atc_Models/AE/ATC%20Model/resnet50/resnet50.caffemodel

wget https://obs-9be7.obs.cn-east-2.myhuaweicloud.com/003_Atc_Models/AE/ATC%20Model/resnet50/resnet50.prototxt

```
2024-05-18 13:08:46 (1.21 MB/s) - 'dog2_1024_683.jpg' saved [41398/41398]

root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/data# cd ..
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification# mkdir model
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification# cd model/
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/model# wget ht
tps://obs-9be7.obs.cn-east-2.myhuaweicloud.com/003_Atc_Models/AE/ATC%20Model/resnet50/resnet50.caffemodel
--2024-05-18 13:09:44--  https://obs-9be7.obs.cn-east-2.myhuaweicloud.com/003_Atc_Models/AE/ATC%20Model/resnet50/resnet50.c
affemodel
Resolving obs-9be7.obs.cn-east-2.myhuaweicloud.com (obs-9be7.obs.cn-east-2.myhuaweicloud.com)... 122.9.88.43
Connecting to obs-9be7.obs.cn-east-2.myhuaweicloud.com (obs-9be7.obs.cn-east-2.myhuaweicloud.com)|122.9.88.43|:443... conne
cted.
HTTP request sent, awaiting response... 200 OK
Length: 102462397 (98M) [binary/octet-stream]
Saving to: 'resnet50.caffemodel'

resnet50.caffemodel           100%[================================================>]  97.71M  85.8MB/s    in 1.1s

2024-05-18 13:09:46 (85.8 MB/s) - 'resnet50.caffemodel' saved [102462397/102462397]

root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/model#
```

```
Saving to: ‘resnet50.caffemodel’

resnet50.caffemodel           100%[==============================================>]  97.71M  85.8MB/s    in 1.1s

2024-05-18 13:09:46 (85.8 MB/s) - ‘resnet50.caffemodel’ saved [102462397/102462397]

root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/model# wget ht
tps://obs-9be7.obs.cn-east-2.myhuaweicloud.com/003_Atc_Models/AE/ATC%20Model/resnet50/resnet50.prototxt
--2024-05-18 13:10:18--  https://obs-9be7.obs.cn-east-2.myhuaweicloud.com/003_Atc_Models/AE/ATC%20Model/resnet50/resnet50.p
rototxt
Resolving obs-9be7.obs.cn-east-2.myhuaweicloud.com (obs-9be7.obs.cn-east-2.myhuaweicloud.com)... 122.9.88.37
Connecting to obs-9be7.obs.cn-east-2.myhuaweicloud.com (obs-9be7.obs.cn-east-2.myhuaweicloud.com)|122.9.88.37|:443... conne
cted.
HTTP request sent, awaiting response... 200 OK
Length: 32500 (32K) [binary/octet-stream]
Saving to: ‘resnet50.prototxt’

resnet50.prototxt             100%[==============================================>]  31.74K  --.-KB/s    in 0.03s

2024-05-18 13:10:18 (1.24 MB/s) - ‘resnet50.prototxt’ saved [32500/32500]

root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/model#
```

第二步：使用 atc 编译模型

atc --model=resnet50.prototxt --weight=resnet50.caffemodel --framework=0 --output=resnet50 --soc_version=Ascend310 --input_format=NCHW --input_fp16_nodes=data --output_type=FP32 --out_nodes=prob:0

```
2024-05-18 13:10:18 (1.24 MB/s) - ‘resnet50.prototxt’ saved [32500/32500]

root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/model# atc --m
odel=resnet50.prototxt --weight=resnet50.caffemodel --framework=0 --output=resnet50 --soc_version=Ascend310 --input_format=
NCHW --input_fp16_nodes=data --output_type=FP32 --out_nodes=prob:0
ATC start working now, please wait for a moment.
...
ATC run success, welcome to the next use.

root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/model# pip3 in
stall --upgrade pip -i https://pypi.tuna.tsinghua.edu.cn/simple/
Looking in indexes: https://pypi.tuna.tsinghua.edu.cn/simple/
Collecting pip
  Downloading https://pypi.tuna.tsinghua.edu.cn/packages/8a/6a/19e9fe04fca059ccf770861c7d5721ab4c2aebc539889e97c7977528a53b
/pip-24.0-py3-none-any.whl (2.1MB)
     |████████████████████████████████| 2.1MB 1.5MB/s
Installing collected packages: pip
  Found existing installation: pip 19.2.3
    Uninstalling pip-19.2.3:
      Successfully uninstalled pip-19.2.3
Successfully installed pip-24.0
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/model#
```

第三步：安装 python 依赖库

pip3 install --upgrade pip -i https://pypi.tuna.tsinghua.edu.cn/simple/（上图）

pip3 install pillow -i https://pypi.tuna.tsinghua.edu.cn/simple/（下图）

```
Collecting pip
  Downloading https://pypi.tuna.tsinghua.edu.cn/packages/8a/6a/19e9fe04fca059ccf770861c7d5721ab4c2aebc539889e97c7977528a53b
/pip-24.0-py3-none-any.whl (2.1MB)
     |████████████████████████████████| 2.1MB 1.5MB/s
Installing collected packages: pip
  Found existing installation: pip 19.2.3
    Uninstalling pip-19.2.3:
      Successfully uninstalled pip-19.2.3
Successfully installed pip-24.0
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/model# pip3 in
stall pillow -i https://pypi.tuna.tsinghua.edu.cn/simple/
Looking in indexes: https://pypi.tuna.tsinghua.edu.cn/simple/
Collecting pillow
  Downloading https://pypi.tuna.tsinghua.edu.cn/packages/5b/d9/8599b0e4f750aa3cc43613f57cae5a0dfe841b1a8c8c8bde97e83828cdfd
/Pillow-9.5.0-cp37-cp37m-manylinux_2_17_aarch64.manylinux2014_aarch64.whl (3.1 MB)
     ---------------------------------------- 3.1/3.1 MB 35.2 MB/s eta 0:00:00
Installing collected packages: pillow
Successfully installed pillow-9.5.0
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package
manager. It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/model# cd ..
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification#
```

第四步：运行模型

cd ..

python3 src/acl_net.py

```
manager. It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/model# cd ..
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification# python3 src/a
cl_net.py
Using device id:0
model path:/root/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/src/../model/resn
et50.om
images path:/root/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/src/../data
init resource stage:
model_id:1
init resource success
images:/root/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/src/../data/dog1_1024
_683.jpg
data interaction from host to device
data interaction from host to device success
execute stage:
execute stage success
data interaction from device to host
data interaction from device to host success
======== top5 inference results: =============
[161]: 0.763672
[162]: 0.157593
```

```
[162]: 0.157593
[167]: 0.039215
[163]: 0.021835
[166]: 0.011871
images:/root/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification/src/../data/dog2_1024
_683.jpg
data interaction from host to device
data interaction from host to device success
execute stage:
execute stage success
data interaction from device to host
data interaction from device to host success
======== top5 inference results: =============
[267]: 0.935547
[266]: 0.041107
[265]: 0.018967
[219]: 0.002865
[160]: 0.000311
*****run finish******
Releasing resources stage:
Resources released successfully.
root@ecs-rayserv4:~/samples/python/level2_simple_inference/1_classification/resnet50_imagenet_classification#
```

学生签名：

报告评分：

指导教师签字：