```
fg@LAPTOP-6HKT5UON:~/Vitis-AI$ sudo docker pull xilinx/vitis-ai:2.5
[sudo] password for fg:
2.5: Pulling from xilinx/vitis-ai
01bf7da0a88c: Pulling fs layer
f3b4a5f15c7a: Pulling fs layer
57ffbe87baa1: Pulling fs layer
364cc837f46b: Pulling fs layer
682da0b8b998: Pulling fs layer
ae68ce154478: Pulling fs layer
6a4e7b3d9de1: Pulling fs layer
3db67a5a349a: Pulling fs layer
616936db6918: Pulling fs layer
bd8cbe945329: Pulling fs layer
cf08decc28cc: Pulling fs layer
ea55142a4d90: Pulling fs layer
d551cff3e379: Pulling fs layer
cbaf3fa20381: Pulling fs layer
4303cc3e0a9d: Pulling fs layer
ae68ce154478: Waiting
5ff83b3e9d8b: Pulling fs layer
6a4e7b3d9de1: Waiting
3ae5d0445f74: Pulling fs layer
80301d53f092: Pulling fs layer
80e940566f6a: Pulling fs layer
2020e6052479: Pulling fs layer
e1184bf8837b: Pull complete
e7b8179e333f: Pull complete
10adeda13421: Pull complete
5e122c562ea9: Pull complete
72eb6d0e3106: Pull complete
29bd8ffbfe1d: Pull complete
a3ed95caeb02: Pull complete
9902499fc2b1: Pull complete
d90cde700f29: Pull complete
4f481d109934: Pull complete
fee00cd20d30: Pull complete
c685a42e6897: Pull complete
Digest: sha256:eaa85efb06924995ebdb973546e7f69169b003b8cc525764bd9524ad554dddbe
Status: Downloaded newer image for xilinx/vitis-ai:2.5
docker.io/xilinx/vitis-ai:2.5

What's Next?
  View summary of image vulnerabilities and recommendations → docker scout quickview xilinx/vitis-ai:2.5
```

```
fg@LAPTOP-6HKT5UON:~/Vitis-AI$ git clone https://github.com/Xilinx/Vitis-AI.git -b v2.5
Cloning into 'Vitis-AI'...
remote: Enumerating objects: 90379, done.
remote: Counting objects: 100% (9413/9413), done.
remote: Compressing objects: 100% (3693/3693), done.
remote: Total 90379 (delta 5143), reused 8936 (delta 5073), pack-reused 80966
Receiving objects: 100% (90379/90379), 2.11 GiB | 5.51 MiB/s, done.
Resolving deltas: 100% (44802/44802), done.
Note: switching to 'c26eae36f034d5a2f9b2a7bfe816b8c43311a4f8'.

You are in 'detached HEAD' state. You can look around, make experimental
changes and commit them, and you can discard any commits you make in this
state without impacting any branches by switching back to a branch.

If you want to create a new branch to retain commits you create, you may
do so (now or later) by using -c with the switch command. Example:

  git switch -c <new-branch-name>

Or undo this operation with:

  git switch -

Turn off this advice by setting config variable advice.detachedHead to false

Updating files: 100% (25298/25298), done.
fg@LAPTOP-6HKT5UON:~/Vitis-AI$ cd Vitis-AI
fg@LAPTOP-6HKT5UON:~/Vitis-AI/Vitis-AI$ git clone
https://github.com/qixingzhang/SummerSchool-Vitis-AI.git
Cloning into 'SummerSchool-Vitis-AI'...
remote: Enumerating objects: 34, done.
remote: Counting objects: 100% (6/6), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 34 (delta 2), reused 6 (delta 2), pack-reused 28
Receiving objects: 100% (34/34), 44.27 MiB | 5.57 MiB/s, done.
Resolving deltas: 100% (5/5), done.
fg@LAPTOP-6HKT5UON:~/Vitis-AI/Vitis-AI$ sudo ./docker_run.sh xilinx/vitis-ai:2.5
[sudo] password for fg:
NOTICE:  BY INVOKING THIS SCRIPT AND USING THE SOFTWARE INSTALLED BY THE
SCRIPT, YOU AGREE ON BEHALF OF YOURSELF AND YOUR EMPLOYER (IF APPLICABLE)
TO BE BOUND TO THE LICENSE AGREEMENTS APPLICABLE TO THE SOFTWARE THAT YOU
INSTALL BY RUNNING THE SCRIPT.

Press any key to continue...
```

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ON YOUR SYSTEM OF ADDITIONAL SOFTWARE NOT LISTED BELOW IN ORDER TO OPERATE
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(AND THEIR RESPECTIVE DEPENDENCIES, IF APPLICABLE) TO BE DOWNLOADED FROM
UBUNTU'S MAIN REPO AND INSTALLED ON YOUR SYSTEM:
http://us.archive.ubuntu.com/ubuntu/dists/bionic/
Press any key to continue...http://us.archive.ubuntu.com/ubuntu/dists/bionic/

1. sudo
2. git
3. zstd
4. tree
5. vim
6. wget
7. bzip2
8. ca-certificates
9. curl
10. unzip
11. python3-minimal
12. python3-opencv
13. python3-venv
14. python3-pip
15. python3-setuptools
16. g++
17. make
18. cmake
19. build-essential

20. autoconf
21. libgoogle-glog-dev
22. libgflags-dev
23. libunwind-dev
24. libtool
25. libgtk2.0-dev
26. libavcodec-dev
27. libavformat-dev
28. libavdevice-dev

BY ELECTING TO CONTINUE, YOU WILL CAUSE THE FOLLOWING SOFTWARE PACKAGES (AND THEIR RESPECTIVE DEPENDENCIES, IF APPLICABLE) TO BE DOWNLOADED FROM ANACONDA REPO AND INSTALLED ON YOUR SYSTEM:
https://anaconda.org”
Press any key to continue...1. absl-py
2. astor
3. attrs
4. backcall
5. backports
6. backports.weakref
7. blas
8. bleach
9. boost
10. bzip2
11. ca-certificates
12. cairo
13. c-ares
14. certifi
15. cffi
16. chardet
17. cloudpickle
18. conda
19. conda-package-handling
20. cryptography
21. cycler
22. cytoolz
23. dask-core
24. dbus
25. decorator
26. defusedxml
27. dill
28. dpuv1_compiler
29. dpuv1-rt
30. dpuv1-rt-ext

31. dpuv1-rt-neptune
32. entrypoints
33. expat
34. ffmpeg
35. fontconfig
36. freeglut
37. freetype
38. fribidi
39. gast
40. gettext
41. gflags
42. giflib
43. glib
44. glog
45. gmp
46. gnutls
47. google-pasta
48. graphite2
49. graphviz
50. grpcio
51. gst-plugins-base
52. gstreamer
53. h5py
54. harfbuzz
55. hdf5
56. icu
57. idna
58. imageio
59. importlib_metadata
60. importlib-metadata
61. intel-openmp
62. ipykernel
63. ipython
64. ipython_genutils
65. ipywidgets
66. jasper
67. jedi
68. jinja2
69. joblib
70. jpeg
71. json-c
72. jsoncpp
73. jsonschema
74. jupyter

75. jupyter_client
76. jupyter_console
77. jupyter_core
78. keras
79. keras-applications
80. keras-base
81. keras-preprocessing
82. kiwisolver
83. krb5
84. lame
85. ld_impl_linux-64
86. leveldb
87. libblas
88. libboost
89. libcblas
90. libedit
91. libffi
92. _libgcc_mutex
93. libgcc-ng
94. libgfortran-ng
95. libglu
96. libiconv
97. liblapack
98. liblapacke
99. libopenblas
100. libopencv
101. libopus
102. libpng
103. libprotobuf
104. libsodium
105. libssh2
106. libstdcxx-ng
107. libtiff
108. libtool
109. libuuid
110. libvpx
111. libwebp
112. libxcb
113. libxml2
114. lmdb
115. lz4-c
116. markdown
117. markupsafe
118. marshmallow

119. matplotlib
120. matplotlib-base
121. mistune
122. mkl
123. mkl_fft
124. mkl_random
125. mkl-service
126. mock
127. more-itertools
128. nbconvert
129. nbformat
130. ncurses
131. nettle
132. networkx
133. notebook
134. numpy
135. numpy-base
136. olefile
137. openblas
138. opencv
139. openh264
140. openssl
141. opt_einsum
142. packaging
143. pandas
144. pandoc
145. pandocfilters
146. pango
147. parso
148. pexpect
149. pickleshare
150. pillow
151. pip
152. pixman
153. pluggy
154. progressbar2
155. prometheus_client
156. prompt_toolkit
157. prompt-toolkit
158. protobuf
159. ptyprocess
160. py
161. pybind11
162. py-boost

163. pycosat

Press any key to continue...163. pycosat

164. pycparser
165. pydot
166. pygments
167. py-opencv
168. pyopenssl
169. pyparsing
170. pyqt
171. pyrsistent
172. pysocks
173. pytest
174. pytest-runner
175. python
176. python-dateutil
177. python-gflags
178. python-graphviz
179. python-leveldb
180. python-utils
181. pytz
182. pywavelets
183. pyyaml
184. pyzmq
185. qt
186. qtconsole
187. qtpy
188. readline
189. requests
190. ruamel_yaml
191. scikit-image
192. scikit-learn
193. scipy
194. send2trash
195. setuptools
196. sip
197. six
198. snappy
199. sqlite
200. tensorboard
201. tensorflow
202. tensorflow-base
203. tensorflow-estimator
204. termcolor
205. terminado

206. testpath
207. _tflow_select
208. threadpoolctl
209. tk
210. toolz
211. tornado
212. tqdm
213. traitlets
214. urllib3
215. wcwidth
216. webencodings
217. werkzeug
218. wheel
219. widgetsnbextension
220. wrapt
221. x264
222. xcompiler
223. xorg-libice
224. xorg-libsm
225. xorg-libx11
226. xorg-libxext
227. xorg-libxpm
228. xorg-libxrender
229. xorg-libxt
230. xorg-renderproto
231. xorg-xextproto
232. xorg-xproto
233. xz
234. yaml
235. yaml-cpp
236. zeromq
237. zipp
238. zlib
239. zstd

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Press any key to continue...

```
Do you agree to the terms and wish to proceed [y/n]? y
Setting up root 's environment in the Docker container...
  WARNING: You are running Vitis AI Docker container as root.
For security reasons, consider running as a regular user:
        $ sh docker_run.sh

OR

        $ docker run -e UID=$(id -u) -e GID=$(id -g) args...

You will be running as vitis-ai-user with non-root UID/GID in Vitis AI Docker container.


==========================================


__          ___ _     _                          _____
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  \ \/  \/ / | | __| / __|______/ /\ \      | |
   \  /\  /  | | |_| \__ \        / ____ \ _| |_
    \/  \/   |_|\__|_|___/       /_/    \_\_____|

==========================================

Docker Image Version: 2.5.0.1260      (CPU)
Vitis AI Git Hash: 502703c
Build Date: 2022-06-12

For TensorFlow 1.15 Workflows do:
        conda activate vitis-ai-tensorflow
For PyTorch Workflows do:
        conda activate vitis-ai-pytorch
For TensorFlow 2.8 Workflows do:
        conda activate vitis-ai-tensorflow2
For WeGo Tensorflow 1.15 Workflows do:
        conda activate vitis-ai-wego-tf1
For WeGo Tensorflow 2.8 Workflows do:
        conda activate vitis-ai-wego-tf2
For WeGo Torch Workflows do:
        conda activate vitis-ai-wego-torch
Vitis-AI /workspace > conda activate vitis-ai-tensorflow2
(vitis-ai-tensorflow2) Vitis-AI /workspace > cd SummerSchool-Vitis-AI
(vitis-ai-tensorflow2) Vitis-AI /workspace/SummerSchool-Vitis-AI > python train.py
```

2023-07-17 09:56:27.906212: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'libcudart.so.11.0'; dlerror: libcudart.so.11.0: cannot open shared object file: No such file or directory; LD_LIBRARY_PATH: /opt/xilinx/xrt/lib:/usr/lib:/usr/lib/x86_64-linux-gnu
2023-07-17 09:56:27.906510: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlerror if you do not have a GPU set up on your machine.
Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-datasets/mnist.npz
11493376/11490434 [==============================] - 6s 1us/step
11501568/11490434 [==============================] - 6s 1us/step
2023-07-17 09:56:39.425545: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'libcuda.so.1'; dlerror: libcuda.so.1: cannot open shared object file: No such file or directory; LD_LIBRARY_PATH: /opt/xilinx/xrt/lib:/usr/lib:/usr/lib/x86_64-linux-gnu
2023-07-17 09:56:39.425599: W tensorflow/stream_executor/cuda/cuda_driver.cc:269] failed call to cuInit: UNKNOWN ERROR (303)
2023-07-17 09:56:39.425649: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:156] kernel driver does not appear to be running on this host (docker-desktop): /proc/driver/nvidia/version does not exist
2023-07-17 09:56:39.426786: I tensorflow/core/platform/cpu_feature_guard.cc:151] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations: AVX2 FMA
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
Model: "dpu_mnist_classifier"

Layer (type)	Output Shape	Param #
input_1 (InputLayer)	[(None, 28, 28, 1)]	0
conv2d (Conv2D)	(None, 28, 28, 32)	832
max_pooling2d (MaxPooling2D)	(None, 14, 14, 32)	0
flatten (Flatten)	(None, 6272)	0
dense (Dense)	(None, 128)	802944
dense_1 (Dense)	(None, 10)	1290

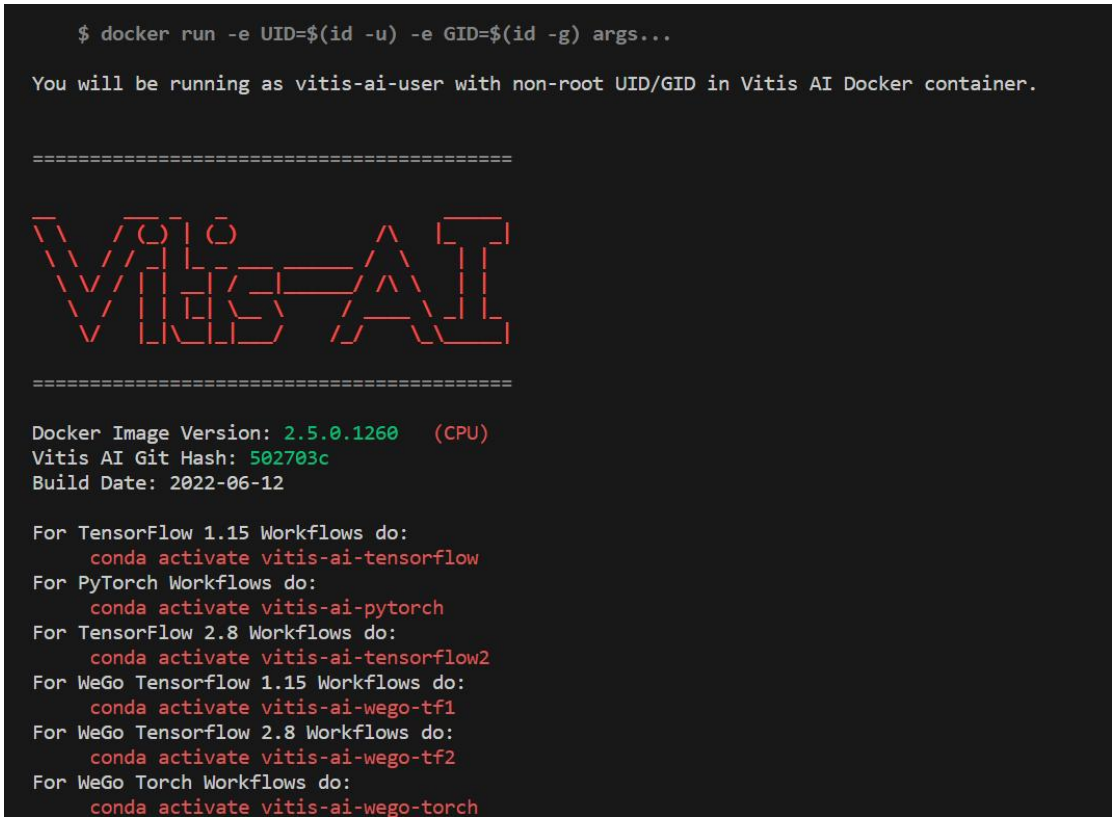
Total params: 805,066
Trainable params: 805,066
Non-trainable params: 0

Epoch 1/5

938/938 [==============================] - 16s 16ms/step - loss: 0.4466 - accuracy: 0.8881 - val_loss: 0.2064 - val_accuracy: 0.9416
Epoch 2/5
938/938 [==============================] - 14s 15ms/step - loss: 0.1748 - accuracy: 0.9489 - val_loss: 0.1300 - val_accuracy: 0.9622
Epoch 3/5
938/938 [==============================] - 15s 15ms/step - loss: 0.1200 - accuracy: 0.9661 - val_loss: 0.1024 - val_accuracy: 0.9705
Epoch 4/5
938/938 [==============================] - 14s 15ms/step - loss: 0.0908 - accuracy: 0.9745 - val_loss: 0.0756 - val_accuracy: 0.9763
Epoch 5/5
938/938 [==============================] - 13s 14ms/step - loss: 0.0730 - accuracy: 0.9798 - val_loss: 0.0662 - val_accuracy: 0.9796
313/313 [==============================] - 1s 4ms/step - loss: 0.0662 - accuracy: 0.9796
Test loss: 0.06615807861089706
Test accuracy: 0.9796000123023987
(vitis-ai-tensorflow2) Vitis-AI /workspace/SummerSchool-Vitis-AI > ./1_quantize.sh
###
QUANTIZE begin
###
2023-07-17 10:01:55.035523: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'libcudart.so.11.0'; dlerror: libcudart.so.11.0: cannot open shared object file: No such file or directory; LD_LIBRARY_PATH: /opt/xilinx/xrt/lib:/usr/lib:/usr/lib/x86_64-linux-gnu
2023-07-17 10:01:55.035589: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlerror if you do not have a GPU set up on your machine.
2023-07-17 10:01:57.552042: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'libcuda.so.1'; dlerror: libcuda.so.1: cannot open shared object file: No such file or directory; LD_LIBRARY_PATH: /opt/xilinx/xrt/lib:/usr/lib:/usr/lib/x86_64-linux-gnu
2023-07-17 10:01:57.552104: W tensorflow/stream_executor/cuda/cuda_driver.cc:269] failed call to cuInit: UNKNOWN ERROR (303)
2023-07-17 10:01:57.552122: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:156] kernel driver does not appear to be running on this host (docker-desktop): /proc/driver/nvidia/version does not exist
2023-07-17 10:01:57.552405: I tensorflow/core/platform/cpu_feature_guard.cc:151] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations: AVX2 FMA
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
[VAI INFO] Start CrossLayerEqualization...
10/10 [==============================] - 1s 69ms/step
[VAI INFO] CrossLayerEqualization Done.
[VAI INFO] Start Quantize Calibration...
313/313 [==============================] - 12s 34ms/step

[VAI INFO] Quantize Calibration Done.
[VAI INFO] Start Post-Quant Model Refinement...
[VAI INFO] Start Quantize Position Ajustment...
[VAI INFO] Quantize Position Ajustment Done.
[VAI INFO] Post-Quant Model Refninement Done.
[VAI INFO] Start Model Finalization...
[VAI INFO] Model Finalization Done.
[VAI INFO] Quantization Finished.
WARNING:tensorflow:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile_metrics` will be empty until you train or evaluate the model.
quantized model was saved to ./quantization_output
##
QUANTIZE COMPLETED
##
(vitis-ai-tensorflow2) Vitis-AI /workspace/SummerSchool-Vitis-AI > ./2_compile.sh
##
COMPILE WITH DNNC begin
##
****
* VITIS_AI Compilation - Xilinx Inc.
****
[INFO] Namespace(batchsize=1, inputs_shape=None, layout='NHWC', model_files=['./quantization_output/quantized_model.h5'], model_type='tensorflow2', named_inputs_shape=None, out_filename='/tmp/dpu_mnist_classifier_DPUCZDX8G_ISA1_B1600_org.xmodel', proto=None)
[INFO] tensorflow2 model: /workspace/SummerSchool-Vitis-AI/quantization_output/quantized_model.h5
[INFO] keras version: 2.8.0
[INFO] Tensorflow Keras model type: functional
[INFO] parse raw model :100%|██████████| 10/10 [00:00<00:00, 14599.04it/s]
[INFO] infer shape (NHWC) :100%|██████████| 18/18 [00:00<00:00, 2242.08it/s]
[INFO] perform level-0 opt :100%|██████████| 2/2 [00:00<00:00, 591.58it/s]
[INFO] perform level-1 opt :100%|██████████| 2/2

[00:00<00:00, 2743.17it/s]
[INFO] generate xmodel :100%|████████████████████████
███████████████████████████████████████
█████████████████████████████████| 18/18
[00:00<00:00, 286.55it/s]
[INFO] dump xmodel: /tmp/dpu_mnist_classifier_DPUCZDX8G_ISA1_B1600_org.xmodel
[UNILOG][INFO] Compile mode: dpu
[UNILOG][INFO] Debug mode: function
[UNILOG][INFO] Target architecture: DPUCZDX8G_ISA1_B1600
[UNILOG][INFO] Graph name: dpu_mnist_classifier, with op num: 26
[UNILOG][INFO] Begin to compile...
[UNILOG][INFO] Total device subgraph number 3, DPU subgraph number 1
[UNILOG][INFO] Compile done.
[UNILOG][INFO] The meta json is saved to "/workspace/SummerSchool-Vitis-AI/compile_output/meta.json"
[UNILOG][INFO] The compiled xmodel is saved to "/workspace/SummerSchool-Vitis-AI/compile_output/dpu_mnist_classifier.xmodel"
[UNILOG][INFO] The compiled xmodel's md5sum is e3b440d19368bc9f820990d333f076bc, and has been saved to "/workspace/SummerSchool-Vitis-AI/compile_output/md5sum.txt"
#####################################
COMPILATION COMPLETED
#####################################



这里我想展现 Lab3 跑完的效果 无奈这个终端没办法输出，我就直接全部复制粘贴过来呈现效果，其中这个图片复制不过来，就截图过来了。