

RV1126部署

yolov5

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yolov5

安装环境(windows)



Bash |

```
1 pip install -r requirements-cpu-ubuntu20.04_py38.txt -i https://mirrors.aliyun.com/pypi/simple/
2 pip install rknn_toolkit-1.7.5-cp38-cp38-linux_x86_64.whl
```

交叉编译程序

交叉编译yolov5

```
1 ./build-linux.sh -t rv1126 -a armhf -d yolov5
```

onnx转rknn

```
1 python convert.py ../model/yolov5s_relu.onnx rv1126
2 python convert.py ../model/yolov8n.onnx rv1126
```

在线预编译

在线预编译yolov5 (ubuntu adb connect 10.0.0.179 连接设备)

```
1 python export_rknn_precompile_model.py yolov5.rknn yolo5_precompile.rknn rv1126
2 python export_rknn_precompile_model.py yolov8.rknn yolov8_precompile.rknn rv1126
```

```
root@rv1126:~/rknpu/rknn/rknn_api/examples/rknn_yolov5_demo/install/rknn_yolov5_demo#
root@rv1126:~/rknpu/rknn/rknn_api/examples/rknn_yolov5_demo/install/rknn_yolov5_demo# ./run_rv1109_rv1126.sh
post process config: box_conf_threshold = 0.50, nms_threshold = 0.60
Loading mode ...
librknn_runtime version 1.7.5 (ccb93f1 build: 2023-07-18 10:56:29 base: 1131)
sdk version: librknn_runtime version 1.7.5 (ccb93f1 build: 2023-07-18 10:56:29 base: 1131) driver version: 6.4.6.5.351518
model input num: 1, output num: 3
  index=0, name=sigmoid_at_1097_147_out0_152, n_dims=4, dims=[1, 3, 640, 640], n_elems=1228800, size=1228800, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003922
  index=1, name=sigmoid_at_1109_149_out0_153, n_dims=4, dims=[1, 255, 80, 80], n_elems=1632000, size=1632000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003958
  index=2, name=sigmoid_at_1121_151_out0_154, n_dims=4, dims=[1, 255, 40, 40], n_elems=408000, size=408000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003919
model is NCHW input fmt
model input height=640, width=640, channel=3
rga_api version 1.3.0 [11] (RGA is compiling with meson base: $PRODUCT_BASE)
once run use 41.451000 ms
loadLabelName ./model/coco_80_labels_list.txt
person @ (208 238 287 511) 0.876641
person @ (480 240 559 525) 0.867932
person @ (108 233 230 535) 0.856740
bus @ (91 127 554 466) 0.610052
run loop count = 100 , average time: 49.485740 ms
root@rv1126:~/rknpu/rknn/rknn_api/examples/rknn_yolov5_demo/install/rknn_yolov5_demo#
root@rv1126:~/rknpu/rknn/rknn_api/examples/rknn_yolov5_demo/install/rknn_yolov5_demo#
```

```

-rw-rw-rw- 1 root root 547196 Sep 19 15:18 ./rknn_yolov5_demo
root@rv1126_rv1109:/root/install/rknn_yolov5_demo# chmod +x ./rknn_yolov5_demo
root@rv1126_rv1109:/root/install/rknn_yolov5_demo# ?[P?P?P?P./run rv1109_rv1126.sh
./rknn_yolov5_demo: /lib/ldbstdc++.so.6: no version information available (required by ./rknn_yolov5_demo)
./rknn_yolov5_demo: /lib/ldbstdc++.so.6: no version information available (required by ./rknn_yolov5_demo)
./rknn_yolov5_demo: /lib/ldbstdc++.so.6: no version information available (required by ./rknn_yolov5_demo)
./rknn_yolov5_demo: /lib/ldbstdc++.so.6: no version information available (required by ./rknn_yolov5_demo)
post process config: box_conf_threshold = 0.50, nms_threshold = 0.60
Loading model
librknn_runtime version 1.7.3 (2e55827 build: 2022-08-25 10:45:32 base: 1131)
sdk version: librknn_runtime version 1.7.3 (2e55827 build: 2022-08-25 10:45:32 base: 1131) driver version: 6.4.6.5.351518
model input num: 1, output num: 3
index=0, name=x.1_0, n_dims=4, dims=[1, 3, 640, 640], n_elems=1228800, size=1228800, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003922
index=0, name=sigmoid_at_1097_147_out0_152, n_dims=4, dims=[1, 255, 80, 80], n_elems=1632000, size=1632000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003858
index=1, name=sigmoid_at_1109_149_out0_153, n_dims=4, dims=[1, 255, 40, 40], n_elems=408000, size=408000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003919
index=2, name=sigmoid_at_1121_151_out0_154, n_dims=4, dims=[1, 255, 20, 20], n_elems=102000, size=102000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003916
model is NCHW input fmt
model input height=640, width=640, channel=3
rga_api version 1.3.2 [0] (RGA is compiling with meson base: $PRODUCT_BASE)
once run use 44.419000 ms
loadLabelName ./model/coco_80_labels_list.txt
person @ (208 238 287 511) 0.876641
person @ (480 240 559 525) 0.867932
person @ (108 233 230 535) 0.856740
bus @ (91 127 554 466) 0.610052
run loop count = 100 , average time: 49.558930 ms
root@rv1126_rv1109:/root/install/rknn_yolov5_demo#

```

```

liting@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$ adb connect 10.0.0.179
adb server version (40) doesn't match this client (39); killing...
* daemon started successfully
connected to 10.0.0.179:5555
liting@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$ python export_rknn_precompile_model.py yolov8.rknn yolov8_precompile.rknn rv1126
Set target: rv1126
W rknn-toolkit version: 1.7.5
→ Loading RKNM model
done
→ Init runtime environment
I NPUTTransfer: Starting NPU Transfer client, Transfer version 2.1.0 (b5861e7@2020-11-23T11:50:36)
D RKNNAPI: =====
D RKNNAPI: RKNM VERSION:
D RKNNAPI: API: 1.7.5 (bb79b30 build: 2023-06-20 09:54:19)
D RKNNAPI: DRV: 1.7.5 (bb79b30 build: 2023-07-18 10:56:54)
D RKNNAPI: =====
done
Exception ignored in: <function RKNM._del__ at 0x7fba1f440a60>
Traceback (most recent call last):
  File "/home/liting/.local/lib/python3.8/site-packages/rknn/api/rknn.py", line 781, in _del__
AttributeError: 'NoneType' object has no attribute 'FileHandler'
liting@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$

```

```

liting@u2010:~/build_05/rv1126/npu/rknn_model_zoo/examples/yolov8/python$ python convert.py ../model/yolov8n.onnx rv1126
W rknn-toolkit version: 1.7.5
→ Config model
done
→ Loading model
W Catch exception when optimize onnx model, skip it! Exception: Unresolved value references: /model.10/Constant_1_output_0,/model.10/Constant_output_0,/model.13/Constant_output_0,/model.22/Constant_1_output_0,/model.22/Constant_2_output_0,/model.22/Constant_3_output_0,/model.22/Constant_4_output_0,/model.22/Constant_5_output_0,/model.22/Constant_output_0
/home/liting/.local/lib/python3.8/site-packages/rknn/api/rknn.py:160: FutureWarning: Possible nested set at position 7
ret = self.rknn_base.load_onnx(model, inputs, input_size_list, outputs)
done
→ Building model
W found outlier value, this may affect quantization accuracy
const name      abs_mean      abs_std      outlier value
Conv./model.22/cv3.2/cv3.2.1/conv/Conv_39:weight      0.09      0.14      -10.215
Conv./model.22/cv3.1/cv3.1.1/conv/Conv_43:weight      0.12      0.19      -13.361, 13.317
Conv./model.22/cv3.0/cv3.0.1/conv/Conv_47:weight      0.18      0.20      -11.216
Conv./model.22/cv3.0/cv3.0.2/conv/Conv_226:weight      2.44      2.47      -17.484
W tensorflow:From /home/liting/.local/lib/python3.8/site-packages/tensorflow/python/framework/func_graph.py:981: py_func (from tensorflow.python.ops.script_ops) is deprecated and will be removed in a future version.
Instructions for updating:
tf.py_func is deprecated in TF V2. Instead, there are two
options available in V2.
- tf.py_function takes a python function which manipulates tf eager tensors instead of numpy arrays. It's easy to convert a tf eager tensor to an ndarray (just call tensor.numpy()) but having access to eager tensors means 'tf.py_function's can use accelerators such as GPUs as well as being differentiable using a gradient tape.
- tf.numpy_function maintains the semantics of the deprecated tf.py_func (it is not differentiable, and manipulates numpy arrays). It drops the stateful argument making all functions stateful.
W tensorflow:From /home/liting/.local/lib/python3.8/site-packages/tensorflow/python/ops/resource_variable_ops.py:1659: calling BaseResourceVariable.__init__ (from tensorflow.python.ops.resource_variable_ops) with constraint is deprecated and will be removed in a future version.
Instructions for updating:
If using Keras pass *constraint arguments to layers.
done
→ Export rknn model
done
liting@u2010:~/build_05/rv1126/npu/rknn_model_zoo/examples/yolov8/python$

```

```

root@rv1126:~/install/rv1126_linux_armhf/rknn_yolov8_demo# ./rknn_yolov8_demo ./model/yolov8_precompile.rknn ./model/bus.jpg
load label ./model/coco_80_labels_list.txt
librknn_runtime version 1.7.5 (c6b93f1 build: 2023-07-18 10:56:29 base: 1131)
model input num: 1, output num: 9
input tensors:
index=0, name=images_227, n_dims=4, dims=[1, 3, 640, 640], n_elems=1228800, size=1228800, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003922
output tensors:
index=0, name=Conv./model.22/cv2.0/cv2.0.2/Conv/out0_0, n_dims=4, dims=[1, 64, 80, 80], n_elems=409600, size=409600, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=70, scale=0.117669
index=1, name=Sigmoid./model.22/Sigmoid/out0_1, n_dims=4, dims=[1, 80, 80, 80], n_elems=512000, size=512000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.002866
index=2, name=Clip./model.22/Clip/out0_2, n_dims=4, dims=[1, 1, 80, 80], n_elems=6400, size=6400, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.002936
index=3, name=Conv./model.22/cv2.1/cv2.1.2/Conv/out0_3, n_dims=4, dims=[1, 64, 40, 40], n_elems=102400, size=102400, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=85, scale=0.094950
index=4, name=Sigmoid./model.22/Sigmoid/1/out0_4, n_dims=4, dims=[1, 80, 40, 40], n_elems=128000, size=128000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003463
index=5, name=Clip./model.22/Clip/1/out0_5, n_dims=4, dims=[1, 1, 40, 40], n_elems=1600, size=1600, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003617
index=6, name=Conv./model.22/cv2.2/cv2.2.2/Conv/out0_6, n_dims=4, dims=[1, 64, 20, 20], n_elems=25600, size=25600, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=95, scale=0.082479
index=7, name=Sigmoid./model.22/Sigmoid/2/out0_7, n_dims=4, dims=[1, 80, 20, 20], n_elems=32000, size=32000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003870
index=8, name=Clip./model.22/Clip/2/out0_8, n_dims=4, dims=[1, 1, 20, 20], n_elems=400, size=400, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003920
model is NCHW input fmt
model input height=640, width=640, channel=3
origin size=640x640 crop size=640x640
input image: 640 x 640, subsampling: 4:2:0, colorspace: YCbCr, orientation: 1
scale=1.000000 dst_box=(0 0 639 639) allow slight change=1 left_offset=0 top_offset=0 padding_w=0 padding_h=0
librga fail to get driver version! compatibility mode will be enabled.
75 im2d_rga_impl rga_version below minimum user driver(328): The driver may be compatible, but it is best to update the driver to version 1.2.4. You can try to update the SD
K or update the <SDK>/kernel/drivers/video/rockchip/rga3 directory individually. current version: librga 1.10.1, driver 8.
rga_api version 1.10.1 [0]
rknn_run
person @ (109 235 224 535) 0.894
person @ (210 241 282 508) 0.894
person @ (477 224 559 521) 0.871
bus @ (99 126 556 459) 0.851
person @ (79 342 114 514) 0.322
write image path: out.png width=640 height=640 channel=3 data=0xa6b8d008
root@rv1126:~/install/rv1126_linux_armhf/rknn_yolov8_demo#

```

```
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$ python export_rknn_precompile_model.py yolov5.rknn yolov5_precompile.rknn rv1126
Set target: rv1126
W rknn-toolkit version: 1.7.5
→ Loading RKNN model
done
→ Init runtime environment
I NPUTransfer: Starting NPU Transfer Client, Transfer version 2.1.0 (b5861e7@2020-11-23T11:50:36)
D RKNNAPI: =====
D RKNNAPI: RKNN VERSION:
D RKNNAPI:   API: 1.7.5 (bb79b30 build: 2023-06-20 09:54:19)
D RKNNAPI:   DRV: 1.7.5 (bb79b30 build: 2023-07-18 10:56:54)
D RKNNAPI: =====
done
Exception ignored in: <function RKNN.__del__ at 0x7efc1daaa60>
Traceback (most recent call last):
  File "/home/liping/.local/lib/python3.8/site-packages/rknn/api/rknn.py", line 781, in __del__
AttributeError: 'NoneType' object has no attribute 'FileHandler'
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$
```

```
root@rv1126:~/rknn_yolov5_demo# ./rknn_yolov5_demo ./model/yolov5_precompile.rknn ./model/bus.jpg
load table ./model/coco_80_labels_list.txt
librknn runtime version 1.7.5 (cc593f1 build: 2023-07-18 10:56:29 base: 1131)
model input num: 1, output num: 3
input tensors:
  index=0, name=images_152, n_dims=4, dims=[1, 3, 640, 640], n_elems=1228800, size=1228800, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003922
output tensors:
  index=0, name=Sigmoid./model.24/Sigmoid/out0_0, n_dims=4, dims=[1, 255, 80, 80], n_elems=1632000, size=1632000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003918
  index=1, name=Sigmoid./model.24/Sigmoid_1/out0_1, n_dims=4, dims=[1, 255, 40, 40], n_elems=408000, size=408000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003920
  index=2, name=Sigmoid./model.24/Sigmoid_2/out0_2, n_dims=4, dims=[1, 255, 20, 20], n_elems=102000, size=102000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003921
model is NCHW input fmt
model input height=640, width=640, channel=3
origin size=640x640 crop size=640x640
input image: 640 x 640, subsampling: 4:2:0, colorspace: YCbCr, orientation: 1
scales:1.000000 dst_box=(0 0 639 639) allow_slight_change=1 left_offset=0 top_offset=0 padding_w=0 padding_h=0
librga fail to get driver version! compatibility mode will be enabled.

rga_api version 1.10.1_0
rknn_run
person @ (480 236 560 528) 0.874
person @ (207 234 287 516) 0.868
person @ (107 232 234 536) 0.859
bus @ (89 126 554 466) 0.614
person @ (78 357 121 517) 0.241
write image path: out.png width=640 height=640 channel=3 data=0xa539e008
root@rv1126:~/rknn_yolov5_demo#
```

RetinaFace

使用rknn_model_zoo

文件夹

Bash |

1

● rknn_model_zoo

2

● rknn-toolkit-1.7.5

windows 环境配置,安装工具

rknn-toolkit-1.7.5

Bash |

1

pip install rknn_toolkit-1.7.5-cp38-cp38-linux_x86_64.whl

交叉编译RetinaFace

rknn_model_zoo

```
1 ./build-linux.sh -t rv1126 -a armhf -d RetinaFace
```

```

liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo/examples$ cd ../
liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo$ export GCC_COMPILER=/home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/arm-linux-gnueabihf
./build-linux.sh -t rv1126 -a armhf -d RetinaFace
arm-linux-gnueabihf-gcc is not available
Please set GCC_COMPILER for rv1126
such as export GCC_COMPILER=/opt/arm-rockchip830-linux-ucibcgnueabihf/bin/arm-rockchip830-linux-ucibcgnueabihf
liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo$ export GCC_COMPILER=/home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/arm-linux-gnueabihf/arm-linux-gnueabihf
liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo$ ./build-linux.sh -t rv1126 -a armhf -d RetinaFace
./build-linux.sh -t rv1126 -a armhf -d RetinaFace
/home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/arm-linux-gnueabihf/arm-linux-gnueabihf
/home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/arm-linux-gnueabihf/arm-linux-gnueabihf-gcc is not available
Please set GCC_COMPILER for rv1126
such as export GCC_COMPILER=/opt/arm-rockchip830-linux-ucibcgnueabihf/bin/arm-rockchip830-linux-ucibcgnueabihf
liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo$ export GCC_COMPILER=/home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/arm-linux-gnueabihf/arm-linux-gnueabihf
liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo$ ./build-linux.sh -t rv1126 -a armhf -d RetinaFace
./build-linux.sh -t rv1126 -a armhf -d RetinaFace
/home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/bin/arm-linux-gnueabihf
=====
BUILD_DEMO_NAME=RetinaFace
BUILD_DEMO_PATH=examples/RetinaFace/cpp
TARGET_SOC=rv1126
TARGET_ARCH=armhf
BUILD_TYPE=Release
ENABLE_ASAN=OFF
DISABLE_RGA=OFF
INSTALL_DIR=/home/liping/build_05/rv1126/npu/rknn_model_zoo/install/rv1126_linux_armhf/rknn_RetinaFace_demo
BUILD_DIR=/home/liping/build_05/rv1126/npu/rknn_model_zoo/build/build_rknn_RetinaFace_demo_rv1126_linux_armhf_Release
CC=/home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/bin/arm-linux-gnueabihf-gcc
CXX=/home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/bin/arm-linux-gnueabihf-g++
=====
-- The C compiler identification is GNU 8.3.0
-- The CXX compiler identification is GNU 8.3.0
-- Check for working C compiler: /home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/bin/arm-linux-gnueabihf-gcc
-- Check for working C compiler: /home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/bin/arm-linux-gnueabihf-gcc - works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/bin/arm-linux-gnueabihf-g++
-- Check for working CXX compiler: /home/liping/build_05/rv1126/rv1126-repo-v20230717-dev/prebuilts/gcc/linux-x86/arm/gcc-arm-8.3-2019.03-x86_64-arm-linux-gnueabihf/bin/arm-linux-gnueabihf-g++ - works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Looking for pthread.h
-- Looking for pthread.h - found
-- Performing Test CMAKE_HAVE_LIBC_PTHREAD
-- Performing Test CMAKE_HAVE_LIBC_PTHREAD - Failed
-- Check if compiler accepts -pthread
-- Check if compiler accepts -pthread - yes
-- Found Threads: TRUE
-- Configuring done
-- Generating done
-- Build files have been written to: /home/liping/build_05/rv1126/npu/rknn_model_zoo/build/build_rknn_RetinaFace_demo_rv1126_linux_armhf_Release
Scanning dependencies of target fileutils
Scanning dependencies of target imageutils
Scanning dependencies of target imagedrawing
Scanning dependencies of target audioutils
[ 9%] Building C object utils.out/CMakeFiles/fileutils.dir/file_utils.c.o
[ 18%] Building C object utils.out/CMakeFiles/imagedrawing.dir/image_drawing.c.o
[ 27%] Building C object utils.out/CMakeFiles/audioutils.dir/audio_utils.c.o
[ 36%] Building C object utils.out/CMakeFiles/imageutils.dir/image_utils.c.o
[ 45%] Linking C static library libaudioutils.a
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_utils.c: In function 'write_image':
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_utils.c:282:35: warning: passing argument 1 of 'get_image_size' discards 'const' qualifier from pointer target type [-Wdiscarded-qualifiers]
    int size = get_image_size(img);
                        ^
In file included from /home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_utils.c:21:
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_utils.h:67:36: note: expected 'image_buffer_t *' {aka 'struct <anonymous> *'} but argument is of type 'const image_buffer_t *' {aka 'const struct <anonymous> *'}
    int get_image_size(image_buffer_t* image);
                        ^
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_utils.c: In function 'convert_image_rga':
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_utils.c:577:56: warning: cast from pointer to integer of different size [-Wpointer-to-int-cast]
    rga_handle_src = importbuffer_physicaladdr((uint64_t)src_phy, &in_param);
                                                ^
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_utils.c:601:56: warning: cast from pointer to integer of different size [-Wpointer-to-int-cast]
    rga_handle_dst = importbuffer_physicaladdr((uint64_t)dst_phy, &dst_param);
                                                ^
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_utils.c:626:27: warning: initialization of 'char *' from incompatible pointer type 'int *' [-Wincompatible-pointer-types]
    char* p_imcolor = &imcolor;
                        ^
[ 54%] Linking C static library libfileutils.a
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_drawing.c: In function 'rbbox_to_corners':
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_drawing.c:1536:19: warning: implicit declaration of function 'cos' [-Wimplicit-function-declaration]
    float a_cos = cos(angle);
                  ^
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_drawing.c:1536:19: warning: incompatible implicit declaration of built-in function 'cos'
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_drawing.c:1536:19: note: include <math.h> or provide a declaration of 'cos'
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_drawing.c:8:11:
+#include <math.h>
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_drawing.c:1536:19:
    float a_cos = cos(angle);
                  ^
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_drawing.c:1537:19: warning: implicit declaration of function 'sin' [-Wimplicit-function-declaration]
    float a_sin = sin(angle);
                  ^
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_drawing.c:1537:19: warning: incompatible implicit declaration of built-in function 'sin'
/home/liping/build_05/rv1126/npu/rknn_model_zoo/utils/image_drawing.c:1537:19: note: include <math.h> or provide a declaration of 'sin'
[ 54%] Built target audioutils
[ 54%] Built target fileutils
[ 63%] Linking C static library libimagedrawing.a
[ 63%] Built target imagedrawing
[ 72%] Linking C static library libimageutils.a
[ 72%] Built target imageutils
Scanning dependencies of target rknn_retinaface_demo
[ 81%] Building CXX object CMakeFiles/rknn_retinaface_demo.dir/main.cc.o
[ 90%] Building CXX object CMakeFiles/rknn_retinaface_demo.dir/rknnui/retinaface.cc.o
[100%] Linking CXX executable rknn_retinaface_demo
[100%] Built target rknn_retinaface_demo

```

```

[ 18%] Built target fileutils
[ 36%] Built target imageutils
[ 54%] Built target imagedrawing
[ 81%] Built target rknn_retinaface_demo
[100%] Built target audioutils
Install the project...
-- Install configuration: "Release"
-- Installing: /home/liping/build_05/rv1126/npu/rknn_model_zoo/install/rv1126_linux_armhf/rknn_RetinaFace_demo/./rknn_retinaface_demo
-- Set runtime path of "/home/liping/build_05/rv1126/npu/rknn_model_zoo/install/rv1126_linux_armhf/rknn_RetinaFace_demo/./rknn_retinaface_demo" to "$ORIGIN/../lib"
-- Installing: /home/liping/build_05/rv1126/npu/rknn_model_zoo/install/rv1126_linux_armhf/rknn_RetinaFace_demo/model/test.jpg
-- Installing: /home/liping/build_05/rv1126/npu/rknn_model_zoo/install/rv1126_linux_armhf/rknn_RetinaFace_demo/lib/librknn_api.so
-- Installing: /home/liping/build_05/rv1126/npu/rknn_model_zoo/install/rv1126_linux_armhf/rknn_RetinaFace_demo/lib/librga.so
The RKNN model can not be found in "/home/liping/build_05/rv1126/npu/rknn_model_zoo/install/rv1126_linux_armhf/rknn_RetinaFace_demo/model", please check!
liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo$ cd

```

out文件目录

```

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utils.out
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install_manifest.txt         1
Makefile                    9
rknn_retinaface_demo         1 213

..
lib
model
RetinaFace_precompile.rknn    652
rknn_retinaface_demo          1 213

```

下载onnx Model

```

1 cd /rknn_model_zoo/examples/RetinaFace/model/
2 ./download_model.sh

```

```

liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo/examples/RetinaFace/model$ chmod +x ./download_model.sh
liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo/examples/RetinaFace/model$ ./download_model.sh
--2024-12-30 09:24:53-- https://ftrg.zbox.filez.com/v2/delivery/data/95f00b0fc900450ba134f8b180b3f7a1/examples/RetinaFace/RetinaFace_mobile320.onnx
Resolving ftrg.zbox.filez.com (ftrg.zbox.filez.com) ... 180.184.171.46
Connecting to ftrg.zbox.filez.com (ftrg.zbox.filez.com)|180.184.171.46|:443 ... connected.
HTTP request sent, awaiting response ... 200
Length: 1715779 (1.6M) [application/octet-stream]
Saving to: 'RetinaFace_mobile320.onnx'

RetinaFace_mobile320.onnx      100%[=====>] 1.64M 7.71MB/s in 0.2s

2024-12-30 09:24:53 (7.71 MB/s) - 'RetinaFace_mobile320.onnx' saved [1715779/1715779]

```

onnx转rknn

```

1 cd ../python/
2 python convert.py ../model/RetinaFace_mobile320.onnx rv1126

```

```

liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo/examples/RetinaFace/model$ cd ../python/
liping@u2010:~/build_05/rv1126/npu/rknn_model_zoo/examples/RetinaFace/python$ python convert.py ../model/RetinaFace_mobile320.onnx rv1126
W rknn-toolkit version: 1.7.5
→ Config model
done
→ Loading model
W opset convert check ...
W "output0": cosine = 1.0, euclidean = 0.0
W "572": cosine = 1.0, euclidean = 0.0
W "571": cosine = 1.0, euclidean = 0.0
W Catch exception when optimize onnx model, skip it! Exception: Unresolved value references: onnx::Concat_396,onnx::Concat_413,onnx::Gather_470,onnx::Gather_482,onnx::Gather_505,
onnx::Gather_517,onnx::Gather_540,onnx::Gather_552,
/home/liping/.local/lib/python3.8/site-packages/rknn/api/rknn.py:160: FutureWarning: Possible nested set at position 7
ret = self.rknn_base.load_onnx(model, inputs, input_size_list, outputs)
done
→ Building model
W found outlier value, this may affect quantization accuracy
const name      abs mean      abs std      outlier value
Conv_Conv_26_121:weight  0.69      0.83      21.961
W:tensorflow:From /home/liping/.local/lib/python3.8/site-packages/tensorflow/python/framework/func_graph.py:981: py_func (from tensorflow.python.ops.script_ops) is deprecated and
will be removed in a future version.
Instructions for updating:
tf.py_func is deprecated in TF V2. Instead, there are two
options available in V2.
- tf.py_function takes a python function which manipulates tf eager
tensors instead of numpy arrays. It's easy to convert a tf eager tensor to
an ndarray (just call tensor.numpy()) but having access to eager tensors
means "tf.py_function"s can use accelerators such as GPUs as well as
being differentiable using a gradient tape.
- tf.numpy_function maintains the semantics of the deprecated tf.py_func
(it is not differentiable, and manipulates numpy arrays). It drops the
stateful argument making all functions stateful.
W:tensorflow:From /home/liping/.local/lib/python3.8/site-packages/tensorflow/python/ops/resource_variable_ops.py:1659: calling BaseResourceVariable.__init__ (from tensorflow.pyth
on.ops.resource_variable_ops) with constraint is deprecated and will be removed in a future version.
Instructions for updating:
If using keras pass *_constraint arguments to layers.
done
→ Export rknn model
done

```

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在线预编译

cd到toolkit的examples→common_function_demos→export_rknn_precompile_model文件夹下，将刚刚得到的RetinaFace.rknn模型拷贝进去。

..	
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yolov8_precompile.rknn	2 866
yolov8n.onnx	12 353

adb连接电脑

```
1 adb connect 10.0.0.44
```

```
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$ adb connect 10.0.0.44
connected to 10.0.0.44:5555
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$
```

```
root@rv1126:~#
root@rv1126:~# ifconfig -a
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.0.44 netmask 255.255.255.0 broadcast 10.0.0.255
    ether 1e:df:e9:1f:e9:47 txqueuelen 1000 (Ethernet)
    RX packets 268241 bytes 315094681 (300.4 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 33103 bytes 3744538 (3.5 MiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    device interrupt 59

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@rv1126:~#
```

在线预编译

```
1 python export_rknn_precompile_model.py RetinaFace.rknn RetinaFace_precompile.rknn rv1126
```

```
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$ adb connect 10.0.0.44
connected to 10.0.0.44:5555
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$ ll
total 31152
drwxrwxr-x 2 liping liping 4096 Dec 30 09:51 ./
drwxrwxr-x 14 liping liping 4096 Sep 19 08:42 ../
-rw-rw-r-- 1 liping liping 1621 Sep 19 08:42 export_rknn_precompile_model.py
-rw-rw-r-- 1 liping liping 1109 Sep 20 03:50 log_feedback_to_the_rknn_toolkit_dev_team.log
-rw-rw-r-- 1 liping liping 451 Sep 19 08:42 README.md
-rw-rw-r-- 1 liping liping 548437 Dec 30 09:51 RetinaFace.rknn
-rw-rw-r-- 1 liping liping 5042630 Sep 20 05:53 yolov5_precompile.rknn
-rw-rw-r-- 1 liping liping 7376119 Sep 20 05:50 yolov5.rknn
-rw-rw-r-- 1 liping liping 12650184 Sep 20 02:03 yolov8n.onnx
-rw-rw-r-- 1 liping liping 2935062 Sep 20 04:03 yolov8_precompile.rknn
-rw-rw-r-- 1 liping liping 3314084 Sep 20 03:44 yolov8.rknn
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$ python export_rknn_precompile_model.py RetinaFace.rknn RetinaFace_precompile.rknn rv1126
Set target: rv1126
W rknn-toolkit version: 1.7.5
-> Loading RKNN model
done
-> Init runtime environment
I NPU Transfer: Starting NPU Transfer Client, Transfer version 2.1.0 (b5861e7@2020-11-23T11:50:36)
D RKNNAPI: =====
D RKNNAPI: RKNN VERSION:
D RKNNAPI: API: 1.7.5 (bb79b30 build: 2023-06-20 09:54:19)
D RKNNAPI: DRV: 1.7.5 (bb79b30 build: 2023-07-18 10:56:54)
D RKNNAPI: =====
done
Exception ignored in: <function RKNN.__del__ at 0x7f6bb3d079d0>
Traceback (most recent call last):
  File "/home/liping/.local/lib/python3.8/site-packages/rknn/api/rknn.py", line 781, in __del__
AttributeError: 'NoneType' object has no attribute 'FileHandler'
liping@u2010:~/build_05/rv1126/npu/rknn-toolkit/examples/common_function_demos/export_rknn_precompile_model$
```

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yolov8_precompile.rknn	2 866
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移植到主板rv1126

运行demo

RetinaFace

```

▼ Bash |
1 ./rknn_retinaface_demo ./model/RetinaFace_precompile.rknn ./model/
2 RetinaFace_precompile.rknn test.jpg

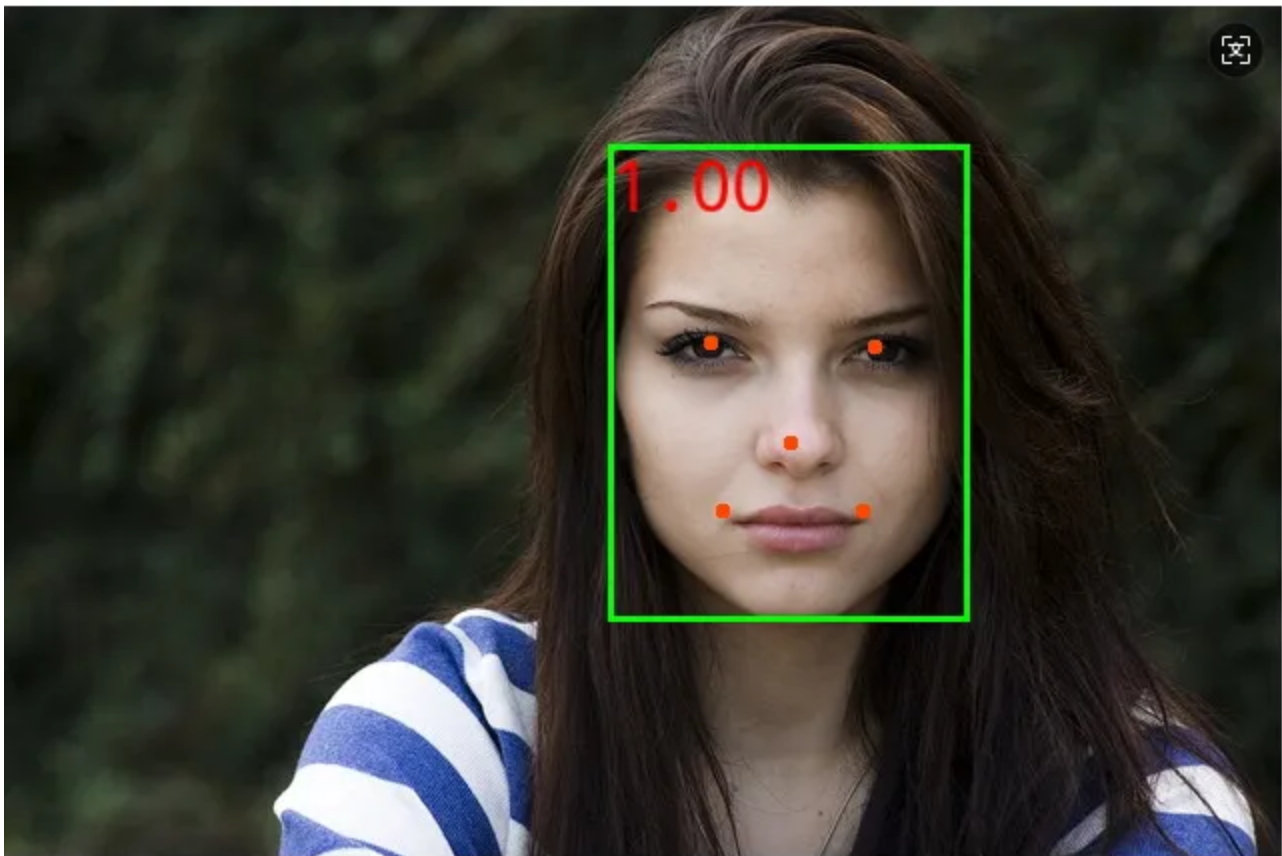
root@rv1126:~/install/rv1126_linux_armhf/rknn_RetinaFace_demo# ./rknn_retinaface_demo ./model/RetinaFace_precompile.rknn ./model/
RetinaFace_precompile.rknn test.jpg
root@rv1126:~/install/rv1126_linux_armhf/rknn_RetinaFace_demo# ./rknn_retinaface_demo ./model/RetinaFace_precompile.rknn ./model/test.jpg
librknn runtime version 1.7.5 (ccb93f1 build: 2023-07-18 10:56:29 base: 1131)
model input num: 1, output num: 3
input tensors:
  index=0, name=input0_129, n_dims=4, dims=[1, 3, 320, 320], n_elems=307200, size=307200, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=115, scale=1.072770
output tensors:
  index=0, name=Concat_Concat_126/out0_0, n_dims=3, dims=[0, 1, 4200, 4], n_elems=16800, size=16800, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=128, scale=0.044761
  index=1, name=Softmax_Softmax_167/out0_1, n_dims=3, dims=[0, 1, 4200, 2], n_elems=8400, size=16800, fmt=NCHW, type=FP16, qnt_type=NONE, zp=128, scale=0.044761
  index=2, name=Concat_Concat_166/out0_2, n_dims=3, dims=[0, 1, 4200, 10], n_elems=42000, size=42000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=106, scale=0.086174
model is NCHW input fmt
model input height=320, width=320, channel=3
origin size=640x427 crop size=640x416
input image: 640 x 427, subsampling: 4:2:0, colorspace: YCbCr, orientation: 1
scale=0.500000 dst_box=(0 54 319 265) allow_slight_change=1_left_offset=0_top_offset=54 padding_w=0 padding_h=108
fill dst image (x y w h)=(0 0 320 320) with color=0x72727272
librga fail to get driver version! Compatibility mode will be enabled.
40 im2d_rga_impl rga_version_below_minimun_range_user_driver(328): The driver may be compatible, but it is best to update the driver to version 1.2.4. You can try to update the S
DK or update the <SDK>/kernel/drivers/video/rockchip/rga3 directory individually. current version: librga 1.10.1, driver .
rga_api version 1.10.1_0
rknn_run
face @ (304 70 482 306) score=0.999512
write image path: result.jpg width=640 height=427 channel=3 data=0xa4136008
root@rv1126:~/install/rv1126_linux_armhf/rknn_RetinaFace_demo#

```

test.img



resut.img



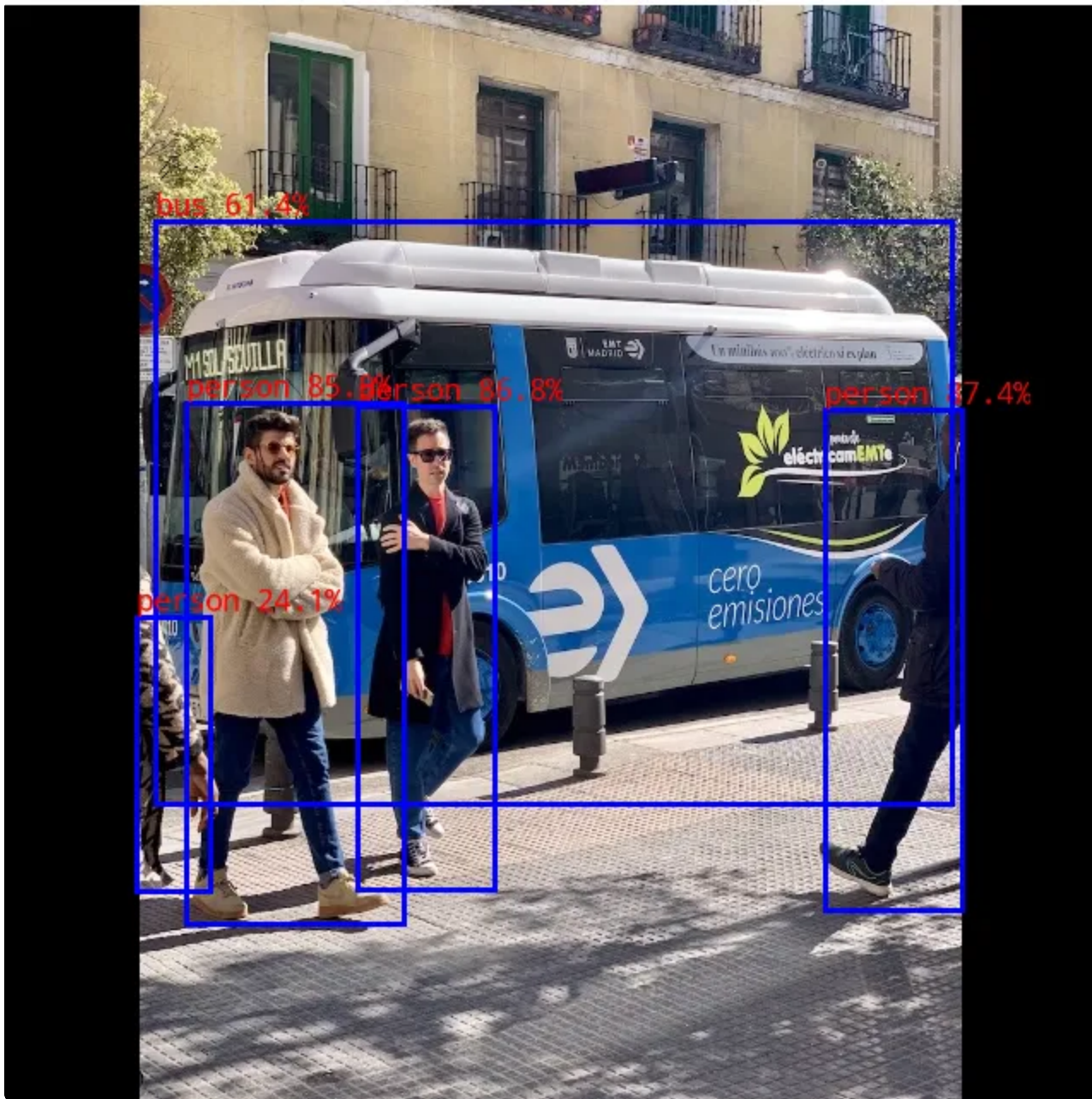
yolov5 demo

```
1 ./rknn_yolov5_demo ./model/yolov5_precompile.rknn ./model/bus.jpg
```

```
root@rv1126-~/install/rv1126_linux_armhf/rknn_yolov5_demo# chmod +x rknn_yolov5_demo
root@rv1126-~/install/rv1126_linux_armhf/rknn_yolov5_demo# ./rknn_yolov5_demo ./model/yolov5_precompile.rknn ./model/bus.jpg
load table ./model/coco_80_labels_list.txt
librknn runtime version 1.7.5 (ccb93f1 build: 2023-07-18 10:56:29 base: 1131)
model input num: 1, output num: 3
input tensors:
  index=0, name=images_152, n_dims=4, dims=[1, 3, 640, 640], n_elems=1228800, size=1228800, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003922
output tensors:
  index=0, name=Sigmoid./model.24/Sigmoid/out0_0, n_dims=4, dims=[1, 255, 80, 80], n_elems=1632000, size=1632000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003918
  index=1, name=Sigmoid./model.24/Sigmoid_1/out0_1, n_dims=4, dims=[1, 255, 40, 40], n_elems=408000, size=408000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003920
  index=2, name=Sigmoid./model.24/Sigmoid_2/out0_2, n_dims=4, dims=[1, 255, 20, 20], n_elems=102000, size=102000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003921
model is NCHW input fmt
model input height=640, width=640, channel=3
origin size=640x640 crop size=640x640
input image: 640 x 640, subsampling: 4:2:0, colorspace: YCbCr, orientation: 1
scale=1.000000 dst_box(0 0 639 639) allow_slight_change=1 _left_offset=0 _top_offset=0 padding_w=0 padding_h=0
librga fail to get driver version! Compatibility mode will be enabled.

rga_api version 1.10.1 [0]
rknn run
person @ (480 236 560 528) 0.874
person @ (207 234 287 516) 0.868
person @ (107 232 234 536) 0.859
bus @ (89 126 554 466) 0.614
person @ (78 357 121 517) 0.241
write_image path: out.png width=640 height=640 channel=3 data=0xa53ff008
root@rv1126-~/install/rv1126_linux_armhf/rknn_yolov5_demo#
```





yolov8 demo



Bash |

```
1 ./rknn_yolov8_demo ./model/yolov8_precompile.rknn ./model/bus.jpg
```

```

root@rv1126:~/install/rv1126_linux_armhf/rknn_yolov8_demo# chmod +x rknn_yolov8_demo
root@rv1126:~/install/rv1126_linux_armhf/rknn_yolov8_demo# ./rknn_yolov8_demo ./model/bus.jpg
load table ./model/coco_80_labels_list.txt
librknn_runtime version 1.7.5 (ccb93f1 build: 2023-07-18 10:56:29 base: 1131)
model input num: 1, output num: 9
input tensors:
  index=0, name=images_227, n_dims=4, dims=[1, 3, 640, 640], n_elems=1228800, size=1228800, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003922
output tensors:
  index=0, name=Conv./model.22/cv2.0/cv2.0.2/Conv/out0_0, n_dims=4, dims=[1, 64, 80, 80], n_elems=409600, size=409600, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=70, scale=0.11766
  index=1, name=Sigmoid./model.22/Sigmoid_1/out0_4, n_dims=4, dims=[1, 80, 80, 80], n_elems=512000, size=512000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.002866
  index=2, name=Clip./model.22/Clip/out0_2, n_dims=4, dims=[1, 1, 80, 80], n_elems=6400, size=6400, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.002936
  index=3, name=Conv./model.22/cv2.1/cv2.1.2/Conv/out0_3, n_dims=4, dims=[1, 64, 40, 40], n_elems=102400, size=102400, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=85, scale=0.09495
  index=4, name=Sigmoid./model.22/Sigmoid_1/out0_4, n_dims=4, dims=[1, 80, 40, 40], n_elems=128000, size=128000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003463
  index=5, name=Clip./model.22/Clip_1/out0_5, n_dims=4, dims=[1, 1, 40, 40], n_elems=1600, size=1600, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003617
  index=6, name=Conv./model.22/cv2.2/cv2.2/Conv/out0_6, n_dims=4, dims=[1, 64, 20, 20], n_elems=25600, size=25600, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=95, scale=0.082479
  index=7, name=Sigmoid./model.22/Sigmoid_2/out0_7, n_dims=4, dims=[1, 80, 20, 20], n_elems=32000, size=32000, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003870
  index=8, name=Clip./model.22/Clip_2/out0_8, n_dims=4, dims=[1, 1, 20, 20], n_elems=400, size=400, fmt=NCHW, type=UINT8, qnt_type=AFFINE, zp=0, scale=0.003920
model is NCHW input fmt
model input height=640, width=640, channel=3
origin size=640x640 crop size=640x640
input image: 640 x 640, subsampling: 4:2:0, colorspace: YCbCr, orientation: 1
scale=1.000000 dst_box=(0 0 639 639) allow_slight_change=1 left_offset=0 top_offset=0 padding_w=0 padding_h=0
librga fail to get driver version! compatibility mode will be enabled.
66 im2d_rga_impl rga version below minimum_range_user driver(328): The driver may be compatible, but it is best to update the driver to version 1.2.4. You can try to update the S
DK or update the <SDK>/kernel/drivers/video/rockchip/rga3 directory individually. current version: librga 1.10.1, driver 8.
rga api version 1.10.1 [0]
rknn_run
person @ (109 235 224 535) 0.894
person @ (210 241 282 508) 0.894
person @ (477 224 559 521) 0.871
bus @ (99 136 556 459) 0.851
person @ (79 342 114 514) 0.322
write_image path: out.png width=640 height=640 channel=3 data=0xa6aea008
root@rv1126:~/install/rv1126_linux_armhf/rknn_yolov8_demo#

```

