

# AI Hat + RPi5 environment construction

## 1. Instructions before use

This tutorial is suitable for building a Raspberry Pi 5 image by yourself. If you directly use the YAHBOOM version of the image, you can ignore the tutorial.

## 2. Start building

### 2.1 Download relevant source code

```
git clone https://github.com/hailo-ai/hailo-rpi5-examples.git
```

Enter the source directory:

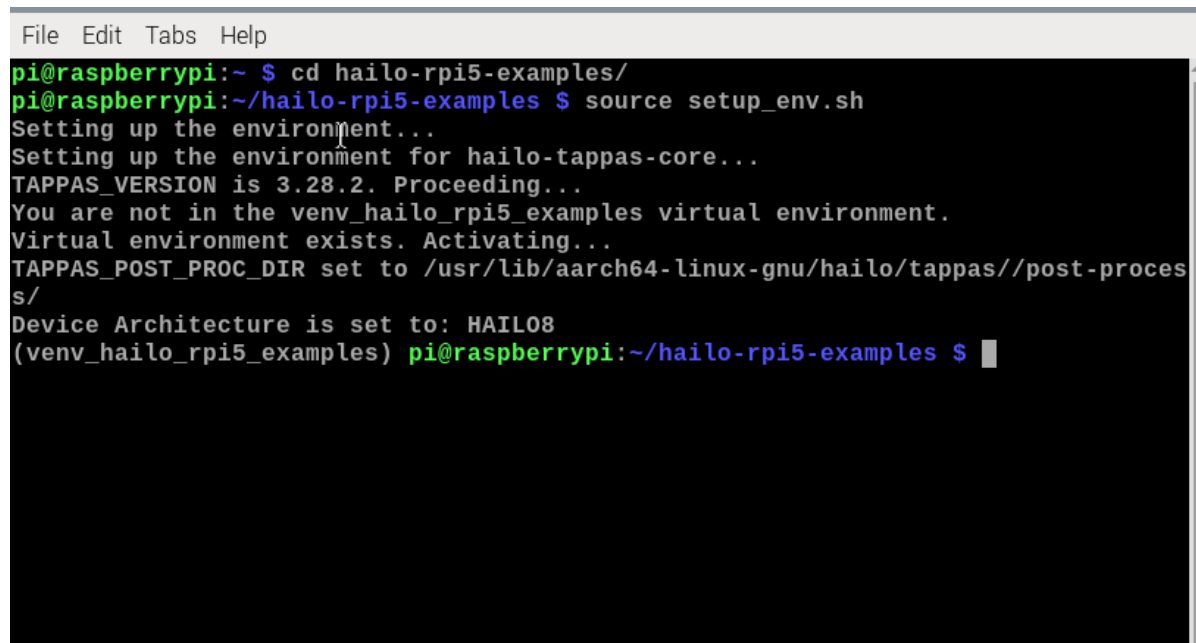
```
cd hailo-rpi5-examples
```

### 2.2 Environment Configuration

To run these examples, you should make sure your environment is setup correctly. We use the hailo-tappas-core pkgconfig file to get the Hailo dependencies.

You can set everything up by sourcing the following script. This script will set the required environment variables and activate the Hailo virtual environment (it will create it if it doesn't exist).

```
source setup_env.sh
```

A terminal window with a menu bar (File, Edit, Tabs, Help) and a dark background. The text is as follows:

```
pi@raspberrypi:~ $ cd hailo-rpi5-examples/  
pi@raspberrypi:~/hailo-rpi5-examples $ source setup_env.sh  
Setting up the environment...  
Setting up the environment for hailo-tappas-core...  
TAPPAS_VERSION is 3.28.2. Proceeding...  
You are not in the venv_hailo_rpi5_examples virtual environment.  
Virtual environment exists. Activating...  
TAPPAS_POST_PROC_DIR set to /usr/lib/aarch64-linux-gnu/hailo/tappas//post-process/  
Device Architecture is set to: HAIL08  
(venv_hailo_rpi5_examples) pi@raspberrypi:~/hailo-rpi5-examples $
```

## 2.3 Dependency Installation

Make sure you are in a virtual environment and run the following command:

```
pip install -r requirements.txt
sudo apt-get install python3 python3-pip ninja-build
pip3 install --user meson
```

```
(venv_hailo_rpi5_examples) pi@raspberrypi:~/hailo-rpi5-examples $ pip install -r requirements.txt
Looking in indexes: https://pypi.org/simple, https://www.piwheels.org/simple
Requirement already satisfied: setproctitle in ./venv_hailo_rpi5_examples/lib/python3.11/site-packages (from -r requirements.txt (line 1)) (1.3.3)
Requirement already satisfied: opencv-python in /home/pi/.local/lib/python3.11/site-packages (from -r requirements.txt (line 2)) (4.8.1.78)
Requirement already satisfied: numpy>=1.21.2 in /usr/lib/python3/dist-packages (from opencv-python->-r requirements.txt (line 2)) (1.24.2)
(venv_hailo_rpi5_examples) pi@raspberrypi:~/hailo-rpi5-examples $
```

## 2.4 Resource Download

```
./download_resources.sh
```

The picture below is because I have successfully downloaded it before.

```
(venv_hailo_rpi5_examples) pi@raspberrypi:~/hailo-rpi5-examples $ ./download_resources.sh
File './resources/yolov5n_seg_h8l_mz.hef' already there; not retrieving.
File './resources/yolov8s_pose_h8l_pi.hef' already there; not retrieving.
File './resources/yolox_s_leaky_h8l_mz.hef' already there; not retrieving.
File './resources/yolov6n.hef' already there; not retrieving.
File './resources/yolov8s_h8l.hef' already there; not retrieving.
File './resources/yolov8s-hailo8l-barcode.hef' already there; not retrieving.
File './resources/detection0.mp4' already there; not retrieving.
(venv_hailo_rpi5_examples) pi@raspberrypi:~/hailo-rpi5-examples $
```

## 2.5 Postprocessing Compilation

To support using retrained models, you need to compile postprocessing locally. This postprocessing will be merged into Hailo TAPPAS in the next release. To compile postprocessing, run the following script:

```
./compile_postprocess.sh
```

```
(venv_hailo_rpi5_examples) pi@raspberrypi:~/hailo-rpi5-examples $ ./compile_post
process.sh
Directory already configured.

Just run your build command (e.g. ninja) and Meson will regenerate as necessary.
Run "meson setup --reconfigure" to force Meson to regenerate.

If build failures persist, run "meson setup --wipe" to rebuild from scratch
using the same options as passed when configuring the build.
ninja: no work to do.
[0/1] Installing files.
Installing cpp/libyolo_hailortpp_post.so to /home/pi/hailo-rpi5-examples/resources
(venv_hailo_rpi5_examples) pi@raspberrypi:~/hailo-rpi5-examples $
```