AAEON AI Development Kit Setup Manual

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Agenda

- Introduction
- Preparation Requirements
  - Documents
  - System and Hardware
- Tutorial step
  - Build Object Detection Demo tool
  - Tiny-YOLO-v3 Model Setup
  - Opencv 3.4 Installation

Introduction

The purpose of this document is to provide a user guide to let user build a demo tool based on Tiny-YOLO-V3 in KL520 chip.

Moreover, user can take this user guide as reference and load their own model in KL520 chip. User must know some basic Linux commands to use this tutorial.

Preparation Requirements

- Documents

Scan the QR Code on the package and download the files below or download the files via website link. Files should be in the Download folder.

  - AAEON_AI_Kit_SDK_v1.2.1zip
  - https://drive.google.com/file/d/1VxNC7XupYTiJaOJJRWnuaLFnlnCUNh7g/view?usp=sharing
  - Host_lib_v0.4.zip
  - http://www.kneron.com/developer_center/

KNEO Stem (USB Dongle)

Document name	Version	Latest modified	
host_lib			Open folder
host_lib_v0.4.zip	v0.4	2020-07-22	Download
host_lib_v0.3.zip	v0.3	2020-07-10	Download
host_lib_0616.zip	v0616	2020-06-22	Download

- System and Hardware Requirement

System	Hardware
Ubuntu 18.04	PICO-APL3 Board
An internet connection	PER-T520-M2AI-A10-0801 AI Module
	An EverFocus EUA1200 webcam

Tutorial Step – Build Object Detection Demo tool

If it is the very first time that user use this set or already update model to Tiny-YOLO-v3, you may skip this part and proceed to the Tiny-YOLO-v3 Model Setup.

- Step 1: Extracting the file in the download folder and open the Readme file.
  File: Host_lib_v0.4.zip
- Step 2: Open Readme of Host_lib_v0.4
- Step 3: Go to Host_lib_v0.4 and open in Terminal.
- Step 4: sudo apt-get update then type sudo apt install libusb-1.0-0-dev
  Enter user password.

```
aaeon@aaeon-GENE-WHU6:~/Downloads/host_lib_v0.4$ sudo apt install libusb-1.0-0-dev
[sudo] password for aaeon:
Reading package lists... Done
Building dependency tree
Reading state information... Done
libusb-1.0-0-dev is already the newest version (2:1.0.21-2).
0 upgraded, 0 newly installed, 0 to remove and 239 not upgraded.
```

- Step 5: mkdir build && cd build

```
aaeon@aaeon-GENE-WHU6:~/Downloads/host_lib_v0.4$ mkdir build && cd build
```

- Step 6: sudo apt install -y gcc g++ cmake libusb-1.0-0-dev
- Step 7: cmake ..

```
aaeon@aaeon-GENE-WHU6:~/Downloads/host_lib_v0.4/build$ cmake ..
```

- Step 8: nproc
  *To check the thread of cores.

```
aaeon@aaeon-GENE-WHU6:~/Downloads/host_lib_v0.4/build$ nproc
2
```

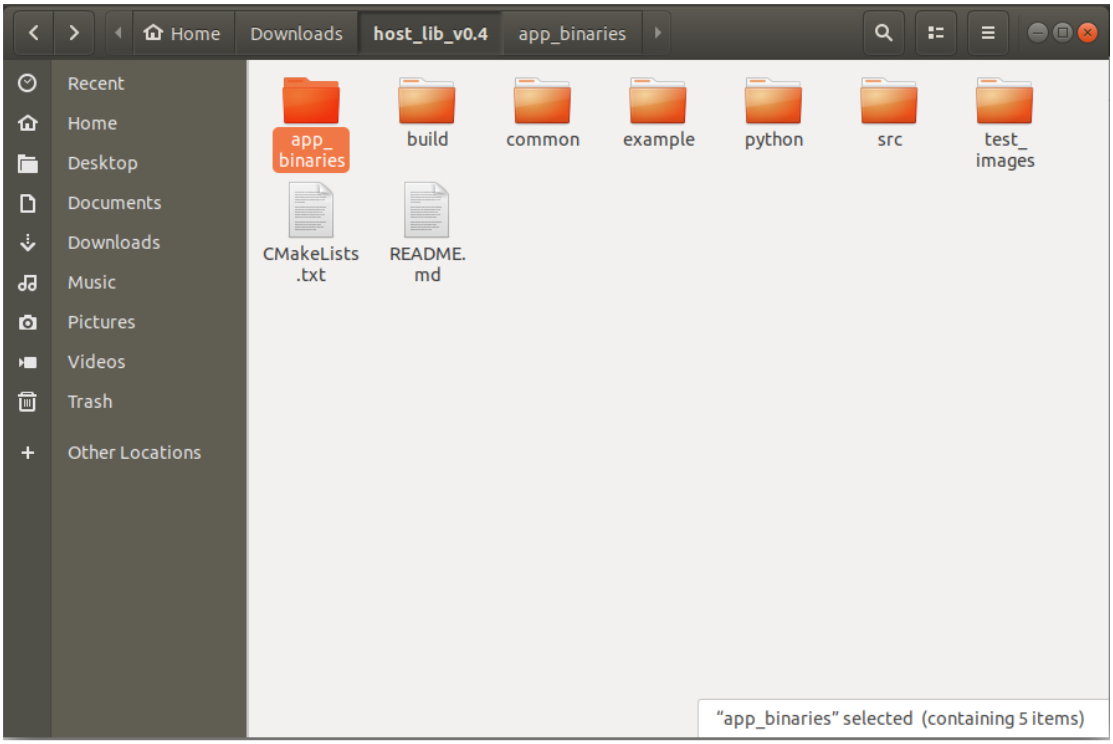
- Step 9: make -j2
  *Number is subject to the thread of the cores.

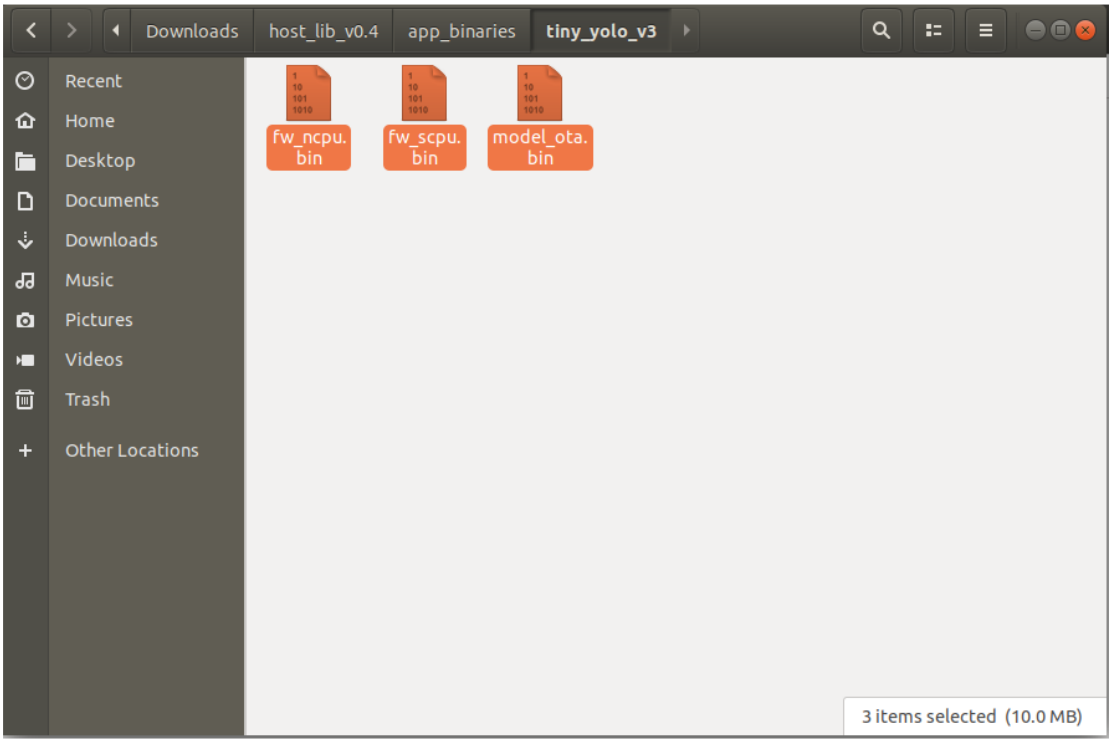
```
aaeon@aaeon-GENE-WHU6:~/Downloads/host_lib_v0.4/build$ make -j2
```

- Step 10: cd bin
  Go to bin folder.

```
aaeon@aaeon-GENE-WHU6:~/Downloads/host_lib_v0.4/build$ cd bin
```

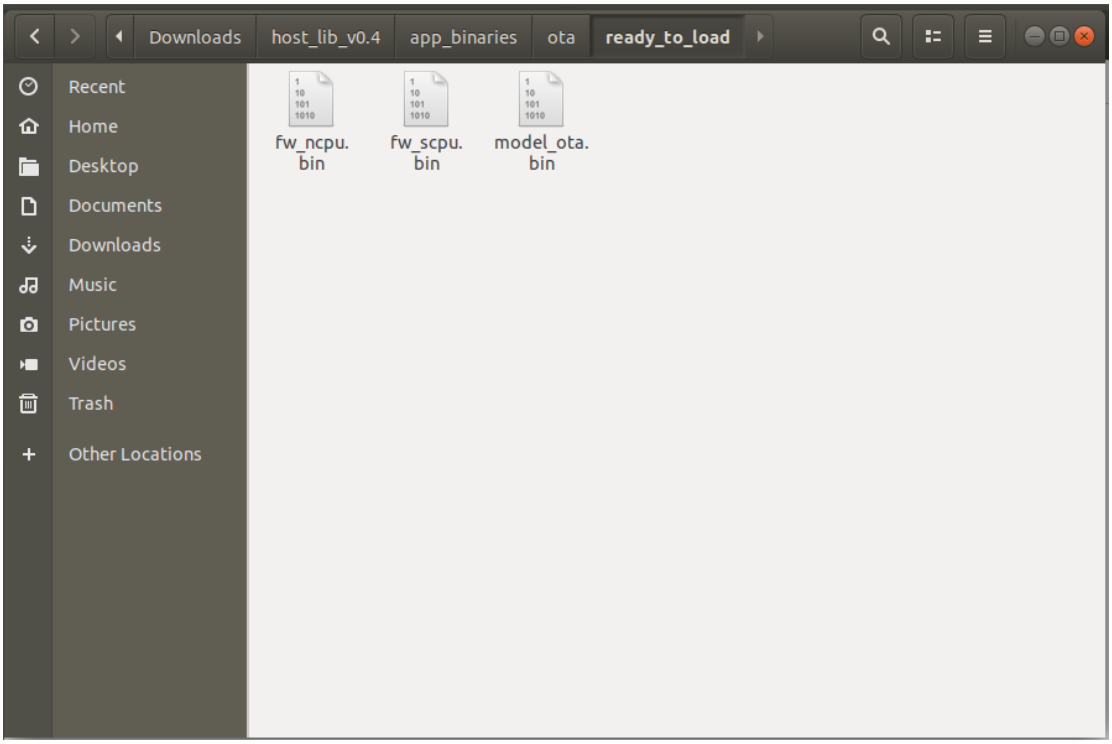
- Step 11: Go to app binaries and find tiny_yolo_v3.





- Step 12:

  Copy the files to the folder ota/ready_to_load.



- Step 13: l

  Type “l”, user may see the following function.

```
aaeon@aaeon-GENE-WHU6:~/Downloads/host_lib_v0.4/build/bin$ l
dme_age_gender*  soft_reset*  update_app*  update_fw*  update_model*
```

- Step 14: ./update_app

  Enter command ./update_app* so to update to Tiny_yolo model.

```
aaeon@aaeon-GENE-WHU6:~/Downloads/host_lib_v0.4/build/bin$ ./update_app*
```

  Note: If encounters add device failed, please enter command ./soft_reset

```
aaeon@aaeon-GENE-WHU6:~/Downloads/host_lib_v0.4/build/bin$ ./soft_reset*
```

  **Note: If still fails to add device, please follow the command below.

  Step 1: Key in command cd ../../../../

  Step 2: sudo usermod -g root user

  *Note: user is user’s name ; example: sudo usermod -g root aaeon

```
aaeon@aaeon-GENE-WHU6:~$ sudo usermod -g root aaeon
```

- Step 3: sudo usermod -a -G root user

```
aaeon@aaeon-GENE-WHU6:~$ sudo usermod -a -G root aaeon
```

- Step 4: reboot

Tutorial Step – Tiny-YOLO-v3 Model Setup

- Step 1: Extracting the file in the download folder and open the Readme file.
  File: AAEON_AI_Kit_SDK_v1.2.zip
- Step 2: Open a terminal window
  - Open a command prompt terminal window via using keyboard shortcut key.

    Ctrl + Alt + T

  - Go to Activities on the upper-left corner of the window, search "terminal".
- Step 3: sudo apt update

```
aaeon@aaeon-GENE-WHU6:~$ sudo apt update
```

- Step 4: Enter password for user

```
[sudo] password for aaeon:
```

- Step 5: sudo apt install -y build-essential cmake

```
aaeon@aaeon-GENE-WHU6:~$ sudo apt install -y build-essential cmake
```

- Step 6:
  sudo apt install -y gcc g++ cmake libgtk2.0-dev pkg-config libusb-1.0-0-dev ffmpeg libavcodec-dev libavformat-dev libswscale-dev libdc1394-22-dev

```
aaeon@aaeon-GENE-WHU6:~$ sudo apt install -y gcc g++ cmake libgtk2.0-dev pkg-config libusb-1
.0-0-dev ffmpeg libavcodec-dev libavformat-dev libswscale-dev libdc1394-22-dev
```

- Step 7: sudo apt install -y qt5-default qtcreator ffmpeg

```
aaeon@aaeon-GENE-WHU6:~$ sudo apt install -y qt5-default qtcreator ffmpeg
```

- Step 8: sudo usermod -g root user
  *Note: user is user's name ; example: sudo usermod -g root aaeon

```
aaeon@aaeon-GENE-WHU6:~$ sudo usermod -g root aaeon
```

- Step 9: sudo usermod -a -G root user

```
aaeon@aaeon-GENE-WHU6:~$ sudo usermod -a -G root aaeon
```

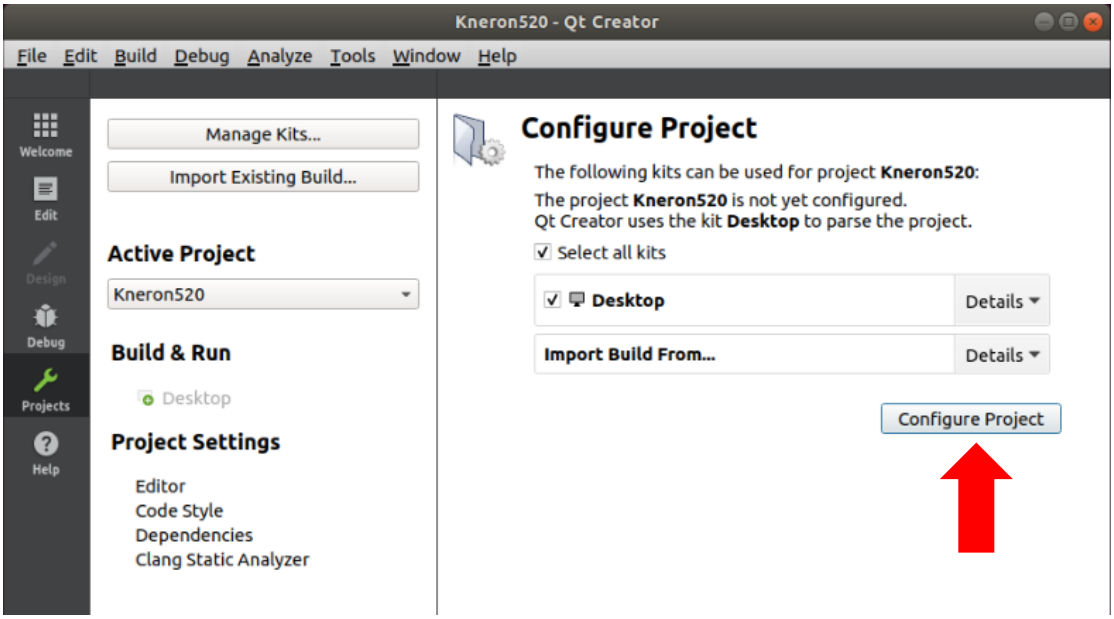
- Step 10: reboot
- Step 11: Go to Kneron520 folder and click right button of the mouse, open in terminal.
- Step 12: cd Kneron520

```
aaeon@aaeon-GENE-WHU6:~/Downloads/AAEON_AI_Kit_SDK_v1.2/Kneron520$ cd Kneron520
```

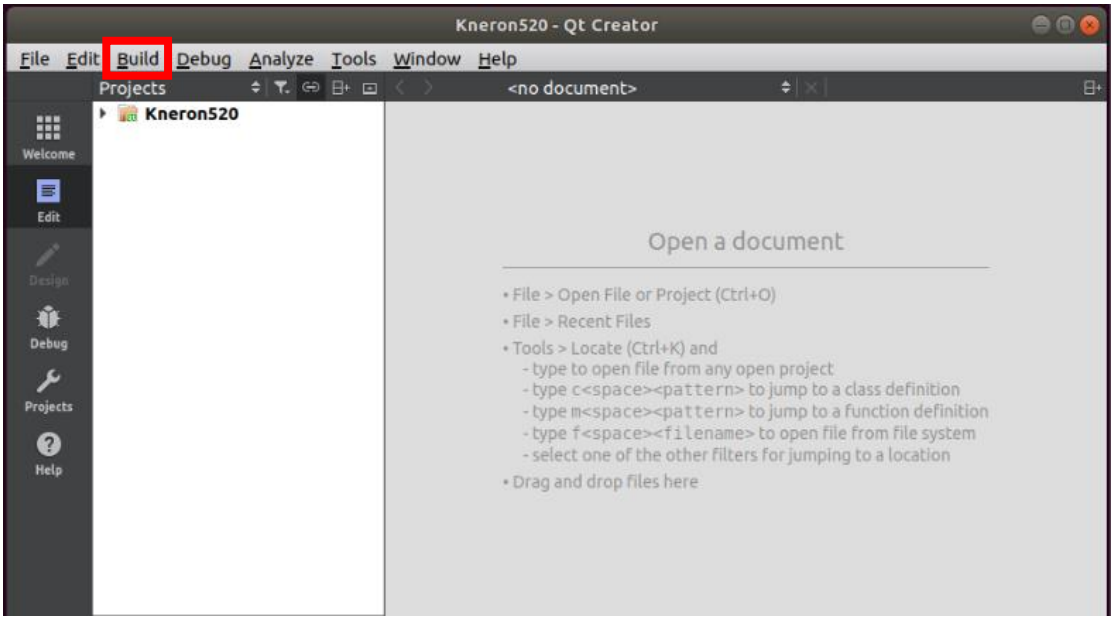
- Step 13: qtcreator Kneron520.pro

```
aaeon@aaeon-GENE-WHU6:~/Downloads/AAEON_AI_Kit_SDK_v1.2/Kneron520$ qtcreator Kneron520.pro
```

- Step 14: Click "Configure Project"



- Step 15: Select Build → Build Project "Kneron520"



- Step 16: Select File → Exit
- Step 17: Key in command cd Kneron520. Copy file from source to target path.
- Step 18: cp -r lib/ include/ KL.sh coco.names ../build-Kneron520-Desktop-Debug/

```
pico@pico-PICO-APL3:~/Downloads/AAEON_AI_Kit_SDK_v1.2/Kneron520$ cp -r lib/
include/ KL.sh coco.names ../build-Kneron520-Desktop-Debug/
```

- Step 19: cd ../build-Kneron520-Desktop-Debug

```
pico@pico-PICO-APL3:~/Downloads/AAEON_AI_Kit_SDK_v1.2/Kneron520$ cd ../build
-Kneron520-Desktop-Debug
```

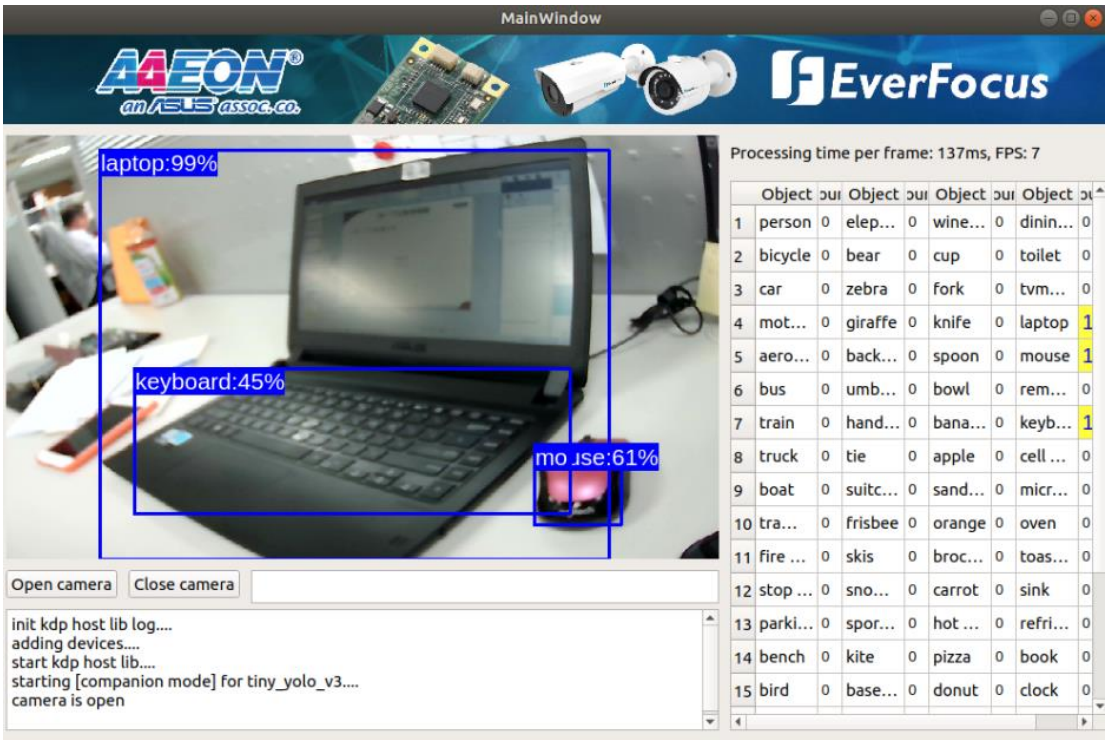
- Step 20: source KL.sh

```
pico@pico-PICO-APL3:~/Downloads/AAEON_AI_Kit_SDK_v1.2/build-Kneron520-Deskto
p-Debug$ source KL.sh
KL520 setup success
```

- Step 21: ./Kneron520

```
pico@pico-PICO-APL3:~/Downloads/AAEON_AI_Kit_SDK_v1.2/build-Kneron520-Deskto
p-Debug$ ./Kneron520
```

- Step 22: Open camera for object detection demo tool.



Note: Just need to repeat step 20 and 21 for the demo if rebooting the system.