UPS Edge

UPS Edge Gateway System Series

User's Manual ed 1

Copyright Notice

Acknowledgement

Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
● xUPS-EDxx-xxxxx-xx01 (X=0~9, A~Z, General P/N)	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any power supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls.
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17. If any of the following situations arises, please the contact our service personnel:
    i. Damaged power cord or plug
    ii. Liquid intrusion to the device
    iii. Exposure to moisture
    iv. Device is not working as expected or in a manner as described in this manual
    v. The device is dropped or damaged
    vi. Any obvious signs of damage displayed on the device
18. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.
Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

AAEON FCC ID: OHBUWSKIT1

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	O	O	O	O	O	O
外部信号连接器及线材	O	O	O	O	O	O

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	**Mercury (Hg)**	**Cadmium (Cd)**	**Hexavalent Chromium (Cr(VI))**	**Polybrominated Biphenyls (PBB)**	**Polybrominated Diphenyl Ethers (PBDE)**
PCB & Other Components	O	O	O	O	O	o
Wires & Connectors for External Connections	O	O	O	O	O	O

O： The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

Table of Content

Chapter 1

Product Specifications

1.1 Product Features

- Intel® Apollo Lake SoC N33350, N4200 and E3900 Series (E3930, E3940, E3950)
- Onboard LPDDR4 Memory up to 8GB, eMMC Storage up to 64GB
- Gigabyte LAN x 2, HDMI x 1, DP x 1
- USB 2.0 x 1, USB 3.0 x 3, USB 3.0 OTG x 1
- WiFi 802.11ac, 1x1, Bluetooth 4.2® (via M.2 2230) [Intel AC9260] (optional)
- 4G LTE cat. 4 (via MiniPCIe) Global [Quectel EG25-GI] (optional)
- AI Core Movidius Myriad X mPCIe card x 1 (optional)

1.2 Product Applications

UPS IoT Edge is an Industrial IoT Gateway able to cover several applications within different markets. Its ability to offer multiple radio interfaces makes possible the communication with industrial wireless sensors, such as Bluetooth, WiFi and AI devices. The gateway can host classic Operating systems and 3rd party application software aimed to complete the coverage of end user application.

1.3 Specifications

System	
Form Factor	105 x 100 x 69,4mm (L x W x H)
CPU	Intel® Apollo Lake SoC up to ATOM x7-E3950
CPU Frequency	up to 2.0GHz (x7-E3950)
I/O Chipset	Processor integrated

Memory Type	Onboard Single/Dual Channel LPDDR4 memory, up to 8GB
BIOS	SPI BIOS — 128Mb Flash
Power Requirement	5V DC Only @6A
Power Supply Type	DC-In
Power Consumption (Typical)	MAX 25W
Dimensions (L x W)	105 x 100 x 69,4mm (L x W x H)
Operating Temperature	Without power adaptor 0°C ~ 45°C (32°F ~ 113°F) With power adaptor 0°C ~ 40°C (32°F ~ 104°F)
Operation Humidity	10 ~ 80% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS complaint Microsoft Azure certified
Others	Movidius Myriad X VPU integrated

Display

VGA/LCD Controller	Intel® HD Graphics 50x up to 605MHz
Output and resolution	HDMI 1.4b x1 4K @ 30 hz DP 1.2 4K @ 60 hz

I/O

Ethernet	Realtek RTL8111G-CG x 2
Audio	HDMI I2S x 1
	DP x 1
USB	USB 3.0 OTG x 1
	USB 3.0 x 3
	USB 2.0 x 1
Antenna	Antenna x 4
Power input	Power button x 1
	DC Power x 1
Onboard eMMC	up to 64 GB
Expansion Slot	Mini Card (Full-size) (auto switch with mSATA)
	M.2 2230

Connectivity

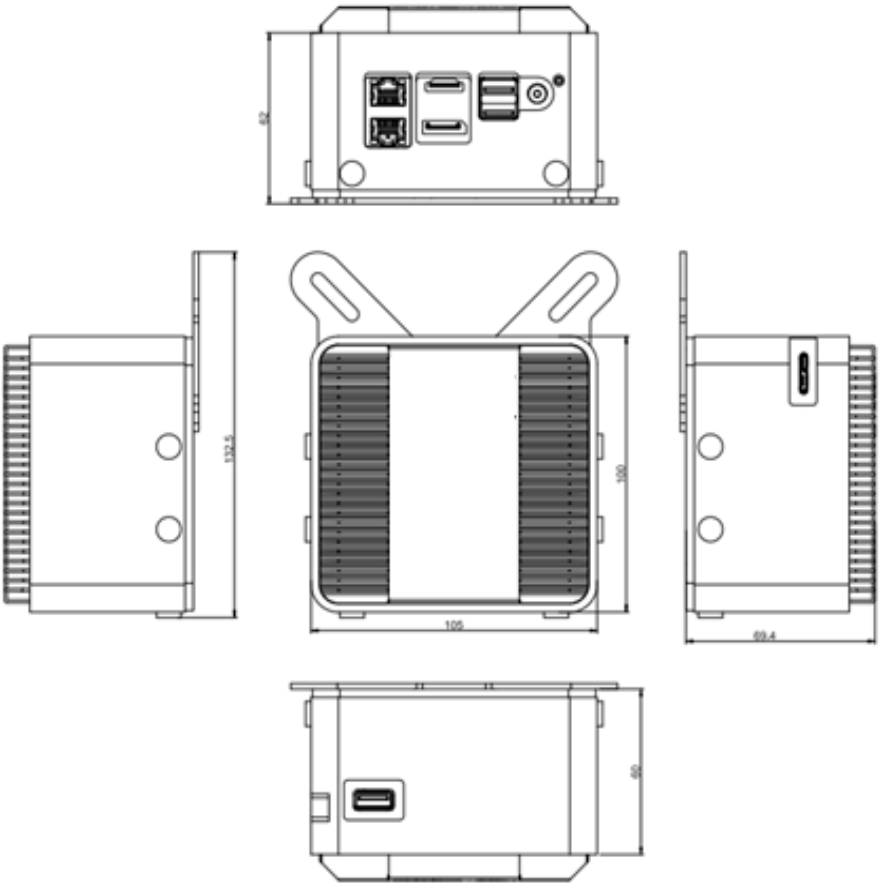
4G	4G LTE cat. 4 (via Quectel EG-25G)
	LTE FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/
	B19/B20/B25/B26/B28; LTE TDD: B38/B39/B40/B41
	UMTS: B1/B2/B4/B5/B6/B8/B19 GSM: B2/B3/B5/B8
WiFi	802.11 ac, 2.4/5GHz
	IEEE 802.11b, IEEE 802.11a, IEEE 802.11g, IEEE
	802.11n, IEEE 802.11acSupport of WPA/WPA2
	Supports 20/40MHz at 2.4GHz and 20/40/80MHz
	at 5GHz

- Bluetooth — Bluetooth V5.0
- AI Core Myriad- X — SoC : Intel® Movidius™ Myriad™ X VPU 2485
  Supported Frameworks :TensorFlow, Caffe
  interface: mini-PCI-e
  Minimum system requirements :
  x86_64 computer running, Ubuntu 16.04 Available, mPCI-E slot ,1GB RAM, 4GB free storage space

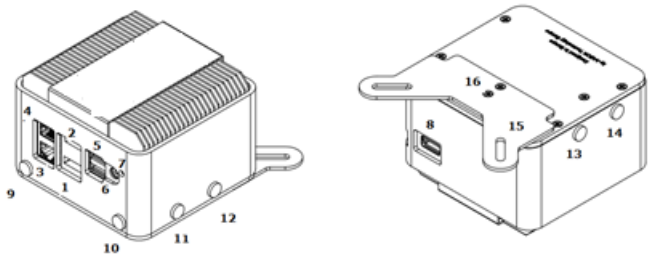
Chapter 2

Hardware Information

2.1 System Dimensions



2.2 I/O Location



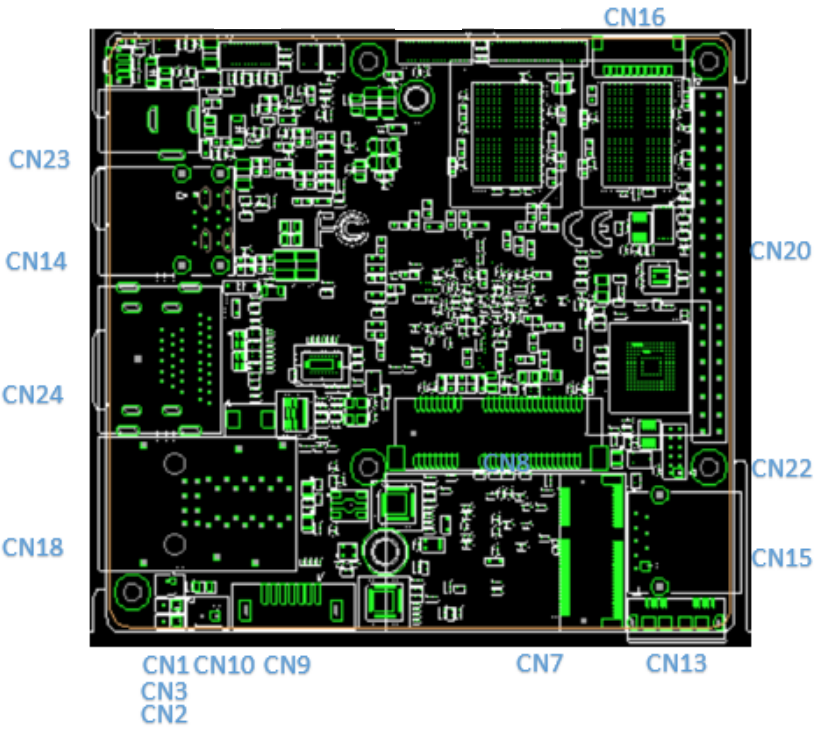
2.3 List of Systems Connectors

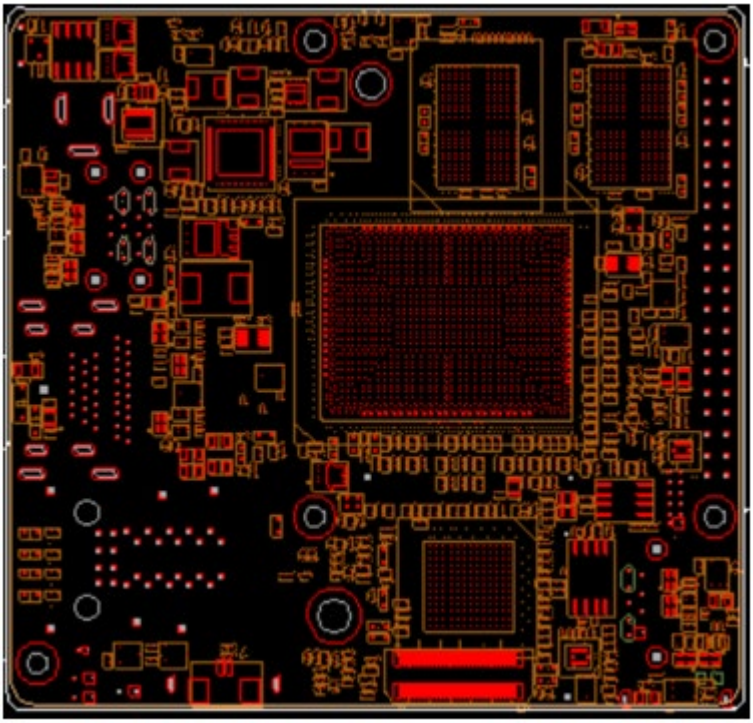
Please refer to the table below to locate the I/Os represented at the point 2.2.

Label	Function
1	Display Port
2	HDMI
3	GbLAN Network port 1
4	GbLAN Network port 2
5	Dual USB 3.0 stack
6	Power input jack
7	Power button
8	USB 3.0 port
9	Antenna connector
10	Antenna connector
11	Antenna connector

12	Antenna connector
13	Antenna connector
14	Antenna connector

2.4 Motherboard Information

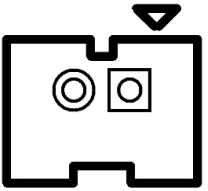



CN17
CN21

2.5 List of Jumpers and Connectors

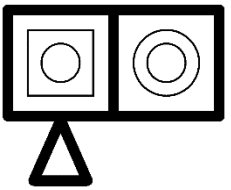
Label	Function
CN1	RTC
CN2	POWER BUTTON
CN3	RESET
CN7	M.2 E-KEY
CN8	mini Card
CN9	SATA
CN10	SATA POWER
CN13	USB3 OTG
CN14	USB3 DUAL PORT
CN15	USB3
CN16	USB panel
CN17	FAN
CN18	LAN DUAL PORT
CN20	HAT40
CN21	EXHAT
CN22	CPLD and BIOS update
CN23	DC JACK
CN24	HDMI + DP PORT

2.5.1 RTC Battery (CN1)



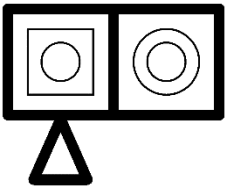
Pin	Signal
1	3.3V
2	GND

2.5.2 Power Button (CN2)



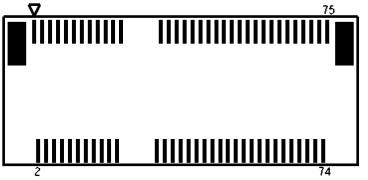
Pin	Signal
1	PWRBTN #
2	GND

2.5.3 Reset (CN3)



Pin	Signal
1	RESET #
2	GND

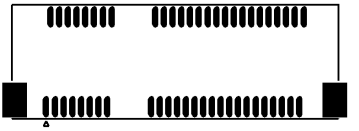
2.5.4 M.2 E-KEY (CN7): 802.11ac, 1x1, Bluetooth 4.2® (via M.2 2230)



Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	3.3V	3	USB_D+
4	3.3V	5	USB_D-	6	NC
7	GND	8	NC	9	NC
10	NC	11	NC	12	NC
13	NC	14	NC	15	NC
16	NC	17	NC	18	GND
19	NC	20	NC	21	NC

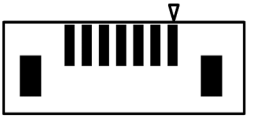
22	UART_RXD	23	NC	24	N/A
25	N/A	26	N/A	27	N/A
28	N/A	29	N/A	30	N/A
31	N/A	32	UART0_TXD	33	GND
34	UART0_CTS	35	PCIE_C_TXP3	36	UART0_RTS
37	PCIE_C_TXN3	38	NC	39	GND
40	NC	41	PCIE_RXP3	42	NC
43	PCIE_RXN3	44	NC	45	GND
46	NC	47	CLK_PCIE_M2_P	48	NC
49	CLK_PCIE_M2_N	50	Suspend Clock	51	GND
52	RESET #	53	PCIE_M2_CLKREQ#	54	Bluetooth Enable
55	WAKE #	56	Wi-Fi Enable	57	GND
58	SMBus_DAT	59	NC	60	SMBus_CLK
61	NC	62	SMBus_Alert	63	GND
64	NC	65	NC	66	NC
67	NC	68	NC	69	GND
70	NC	71	NC	72	3.3V
73	NC	74	3.3V	75	GND

2.5.5 Mini Card (CN8)



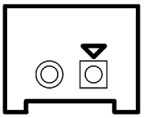
Pin	Signal	Pin	Signal	Pin	Signal
1	WAKE #	2	3.3V	3	NC
4	GND	5	INT_SERIRQ	6	1.5V
7	PCIE_MINI_CLKREQ#	8	NC	9	GND
10	NC	11	CLK_PCIE_MINI_N	12	NC
13	CLK_PCIE_MINI_P	14	NC	15	GND
16	NC	17	NC	18	GND
19	NC	20	3G Enable	21	GND
22	RESET #	23	PERn0_mSATA_R+	24	3.3V
25	PERp0_mSATA_R-	26	GND	27	GND
28	1.5V	29	GND	30	I2C_CLK
31	PETn0_mSATA_T-	32	I2C_DAT	33	PETp0_mSATA_T+
34	GND	35	GND	36	USB_D-
37	GND	38	USB_D+	39	3.3V
40	GND	41	3.3V	42	NC
43	mSATA_PCIe_SEL_C	44	NC	45	NC
46	NC	47	NC	48	1.5V
49	NC	50	GND	51	NC
52	3.3V				

2.5.6 SATA (CN9)



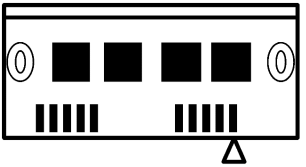
Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	TX+	3	TX-
4	GND	5	RX-	6	RX+
7	GND	8		9	

2.5.7 SATA (CN10)



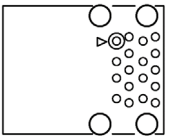
Pin	Signal
1	5V
2	GND

2.5.8 USB3 OTG (CN13)



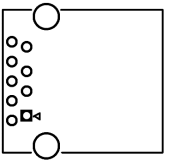
Pin	Signal	Pin	Signal	Pin	Signal
1	5V	2	USB2_D-	3	USB2_D+
4	ID	5	GND	6	USB3_RX-
7	RSB3_RX+	8	GND	9	USB3_TX-
10	USB3_TX+	11		12	

2.5.9 USB DUAL PORT (CN14)



Pin	Signal	Pin	Signal	Pin	Signal
1	5V	2	USB2_D1-	3	USB2_D1+
4	GND	5	USB3_RX1-	6	USB3_RX1+
7	GND	8	USB3_TX1-	9	USB3_TX1+
10	5V	11	USB2_D2-	12	USB2_D2+
13	GND	14	USB3_RX2-	15	USB3_RX2+
16	GND	17	USB3_TX2-	18	USB3_TX2+

2.5.10 USB 13 (CN15)

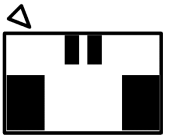


Pin	Signal	Pin	Signal	Pin	Signal
1	5V	2	USB2_D-	3	USB2_D+
4	GND	5	USB3_RX-	6	USB3_RX+
7	GND	8	USB3_TX-	9	USB3_TX+

2.5.11 USB Panel (CN16)

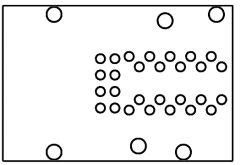
Pin	Signal	Pin	Signal	Pin	Signal
1	5V	2	USB2_D1-	3	USB2_D1+
4	GND	5	5V	6	USB2_D2-
7	USB2_D2+	8	GND	9	UART_RX
10	UART_TX				

2.5.12 FAN (CN17)



Pin	Signal	Pin	Signal
1	5V	2	GND

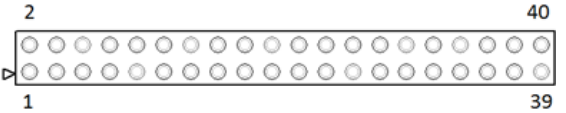
2.5.13 LAN Dual Port (CN18)



Pin	Signal	Pin	Signal	Pin	Signal
R1A	LAN1_MDI0+	R2A	LAN1_MDI0-	R3A	LAN1_MDI1+
R4A	LAN1_MDI1-	R5A	LAN1_MDI2+	R6A	LAN1_MDI2-
R7A	LAN1_MDI3+	R8A	LAN1_MDI3-	R9A	GND
R10A	GND	L1A	LAN1_ACTLED-	L2A	LAN1_ACTLED+
L3A	LAN1_LINK1000#	L4A	LAN1_LINK100#	R1B	LAN2_MDI0+
R2B	LAN2_MDI0-	R3B	LAN2_MDI1+	R4B	LAN2_MDI1-
R5B	LAN2_MDI2+	R6B	LAN2_MDI2-	R7B	LAN2_MDI3+
R8B	LAN2_MDI3-	R9B	GND	R10B	GND
L1B	LAN2_ACTLED-	L2B	LAN2_ACTLED+	L3B	LAN2_LINK1000#

L4B	LAN2_LINK100#

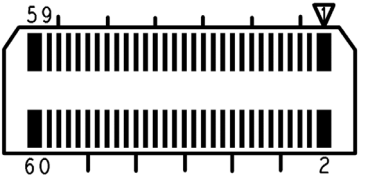
2.5.14 HAT 40 (CN20)



Pin	Signal	BIOS
1	3V3	
2	5V	
3	GPIO0/I2C1_SDA	GPIO1
4	5V	
5	GPIO1/I2C1_SCL	GPIO2
6	GND	
7	GPIO2/ADC_in1	GPIO3
8	GPIO15/UART_TXD	GPIO16
9	GND	
10	GPIO16/UART_RXD	GPIO17
11	GPIO3/UART_RTS/ADC_in2	GPIO4
12	GPIO17/I2S_BCLK	GPIO18
13	GPIO4/ADC_in3	GPIO5
14	GND	
15	GPIO5/ADC_in4	GPIO6
16	GPIO18	GPIO19
17	3V3	

18	GPIO19	GPIO20
19	GPIO6/SPI_1_TXD	GPIO7
20	GND	
21	GPIO7/SPI_1_RXD	GPIO8
22	GPIO20	GPIO21
23	GPIO8/SPI_1_CLK	GPIO9
24	GPIO21/SPI_1_FS0	GPIO22
25	GND	
26	GPIO22/SPI_1_FS1	GPIO23
27	GPIO9/I2C0_SDA	GPIO10
28	GPIO23/I2C0_SCL	GPIO24
29	GPIO10	GPIO11
30	GND	
31	GPIO11	GPIO12
32	GPIO24/PWM0	GPIO25
33	GPIO12/PWM1	GPIO13
34	GND	
35	GPIO13/I2S_WS_SYNC	GPIO14
36	GPIO25/UART_CTS	GPIO26
37	GPIO14	GPIO15
38	GPIO26/I2S_SDI	GPIO27
39	GND	
40	GPIO27/I2S_SDO	GPIO28

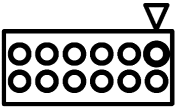
2.5.15 EXHAT (CN21)



Pin	Signal	Pin	Signal	Pin	Signal
1	GPIO1	2	GPIO2	3	GPIO3
4	GPIO4	5	GND	6	GND
7	GPIO5	8	GPIO6	9	GPIO7
10	GPIO8	11	GND	12	GND
13	GPIO9	14	GPIO10	15	GPIO11
16	GPIO12	17	GND	18	GND
19	GPIO13	20	GPIO14	21	GPIO15
22	GPIO16	23	GND	24	GND
25	PLL_IN-	26	PLL1_OUT-	27	PLL1_IN+
28	PLL1_OUT+	29	GND	30	GND
31	INT_SERIRQ_R	32	LPC_R_CLKOUT0	33	LPC_CLKRU_N
34	GND	35	GND	36	LPC_R_AD3
37	SIO_SPI_1_TXD	38	LPC_R_AD2	39	SIO_SPI_1_RXD
40	LPC_R_AD1	41	SIO_SPI_1_FS0	42	LPC_R_AD0
43	SIO_SPI_1_FS1	44	GND	45	SIO_SPI_1_CLK
46	LPC_FRAME_R	47	GND	48	GND
49	I2C_SCL3_3V3	50	AVS_DMIC_CLK_A1	51	I2C_SDA3_3V3
52	AVS_DMIC_CLK_B1	53	GND	54	AVS_DMIC_CLK_AB2

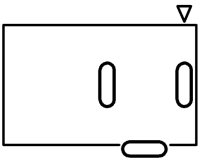
55	I2C_SCL2_3V3	56	GND	57	I2C_SDA2_3V3
58	AVS_DMIC_DATA_1	59	GND	60	AVS_DMIC_DATA_2

2.5.16 CPLD and BIOS update (CN22)



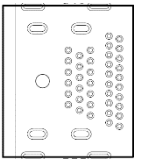
Pin	Signal	Pin	Signal	Pin	Signal
1	JTAG_TCK	2	GND	3	JTAG_TDO
4	1.8V	5	JTAG_TMS	6	SPI_CS
7	SPI_CLK	8	SPI_MISO	9	JTAG_TDI
10	GND	11	SPI_MOSI	12	SPI_HOLD

2.5.17 CPLD and BIOS update (CN22)



Pin	Signal	Pin	Signal	Pin	Signal
1	5V	2	GND	3	GND

2.5.18 HDMI Dual Port (CN24)



Pin	Signal	Pin	Signal	Pin	Signal
P1	DDI0_TXP_DP_0	P2	GND	P3	DDI0_TXN_DP_0
P4	DDI0_TXP_DP_1	P5	GND	P6	DDI0_TXN_DP_1
P7	DDI0_TXP_DP_2	P8	GND	P9	DDI0_TXN_DP_2
P10	PORT0_CLK+	P11	GND	P12	PORT0_CLK-
P13	CONFIG1	P14	CONFIG2	P15	DP_AUX_P
P16	GND	P17	DP_AUX_N	P18	DDI0_TYPE_C_HPD
P19	GND	P20	3.3V	P21	DDI1_TXP_HDMI_0
P22	GND	P23	DDI1_TXN_HDMI_0	P24	DDI1_TXP_HDMI_1
P25	GND	P26	DDI1_TXN_HDMI_1	P27	DDI1_TXP_HDMI_2
P28	GND	P29	DDI1_TXN_HDMI_2	P30	DDI1_CLK+_HDMI
P31	GND	P32	DDI1_CLK-_HDMI	P33	HDMI1_CEC_D
P34	NC	P35	DDC_CLK	P36	DDC_DATA
P37	GND	P38	5V		DDI1_TYPE_C_HPD

Chapter 3

Drivers Installation

3.1 Driver Download and Installation

Please follow the steps for driver downloading and installation.

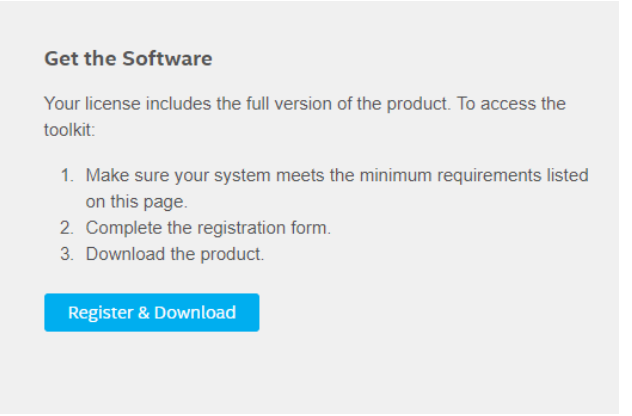
Step 0 – Basic setup of the system and accessories

1. Power adapter (5V/6A DC) is well connected with system and power outlet
2. Connect HDMI cable in type A male connector. make sure it's well connected with system and display
3. Connect Keyboard & mouse to control your device.
4. Connect the antennas

5. Visit the page https://wiki.up-community.org/Software and select the guide for your preferred Operating System
6. You will be able to access to download and install guides for Microsoft Windows 10, Canonical Ubuntu, Ubilinux and Yocto
7. Other 3rd party softwares, such as IioT frameworks, may be available

3.2 OpenVino installation

1. Make sure the bios is updated to latest stable version:
    a. https://downloads.up-community.org/ to get the bios
    b. https://wiki.up-community.org/Bios_Update to get the procedure
2. Install Ubuntu or Ubilinux following the instructions here:
    a. For Ublinux: https://wiki.up-community.org/Ubilinux
    b. For Ubuntu: https://wiki.up-community.org/Ubuntu
3. The gateway is pre-validated with OpenVINO development kit, for more informations check https://software.intel.com/en-us/openvino-toolkit
4. Get the open source AI stack Hardware Abstraction Layer from https://up-shop.org/index.php?controller=attachment&id_attachment=185
5.
    a. Download OPENVINO : https://software.intel.com/en-us/openvino-toolkit/choose-download/free-download-linux



b. #2 Extract OPENVINO on Downloads

c. #3 Type: cd ~/Downloads/l_openvino_toolkit_p_2018.5.445/

```
a@a:~$ cd ~/Downloads/l_openvino_toolkit_p_2018.5.445/
a@a:~/Downloads/l_openvino_toolkit_p_2018.5.445$ sudo
```

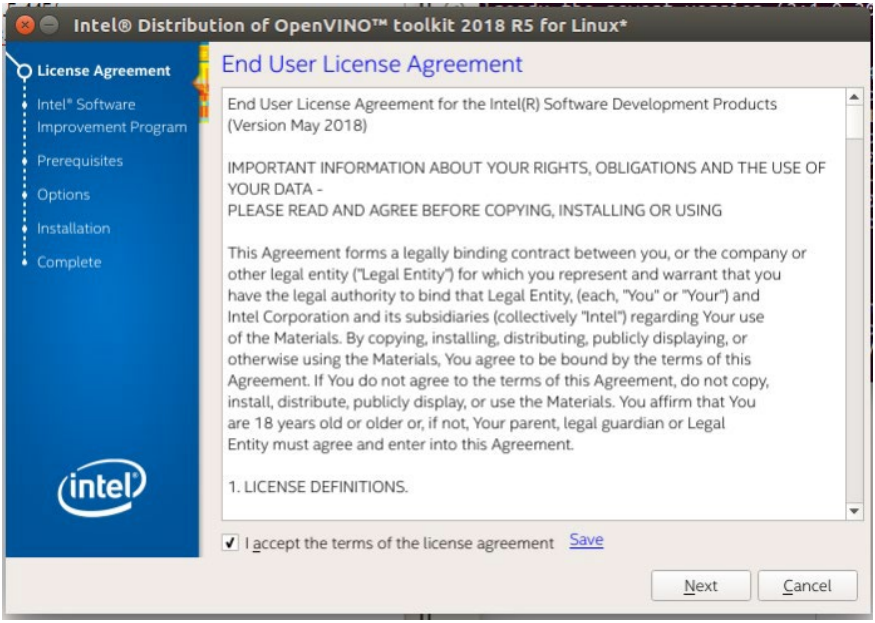
d. #4 Type: sudo -E ./install_cv_sdk_dependencies.sh

```
a@a: ~/Downloads/l_openvino_toolkit_p_2018.5.445
a@a:~/Downloads/l_openvino_toolkit_p_2018.5.445$ sudo -E ./install_cv_sdk_depend
encies.sh
[sudo] password for a:

This script installs the following OpenVINO 3rd-party dependencies:
1. FFmpeg and GStreamer libraries required for OpenCV and Inference Engine
2. libusb library required for Myriad plugin for Inference Engine
3. build dependencies for OpenVINO samples
```

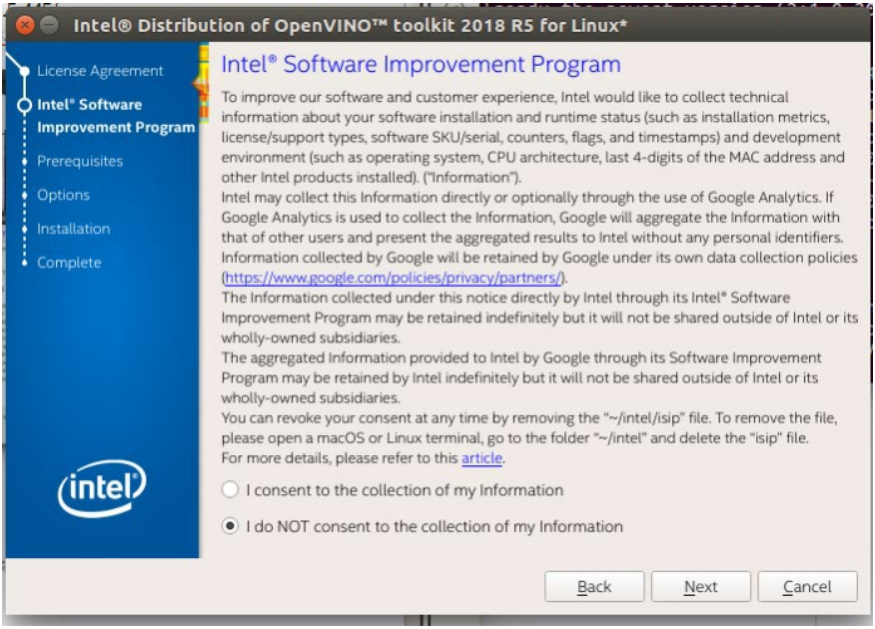
e. #5 Type: sudo ./install_GUI.sh

```
a@a:~/Downloads/l_openvino_toolkit_p_2018.5.445$ sudo ./install_GUI.sh
```

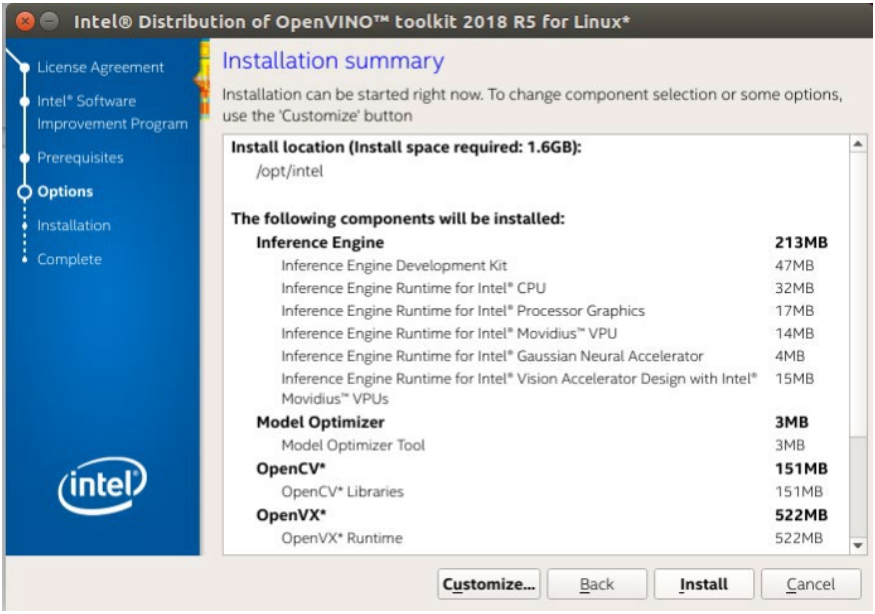
f. #6 Accept license agreement and click Next



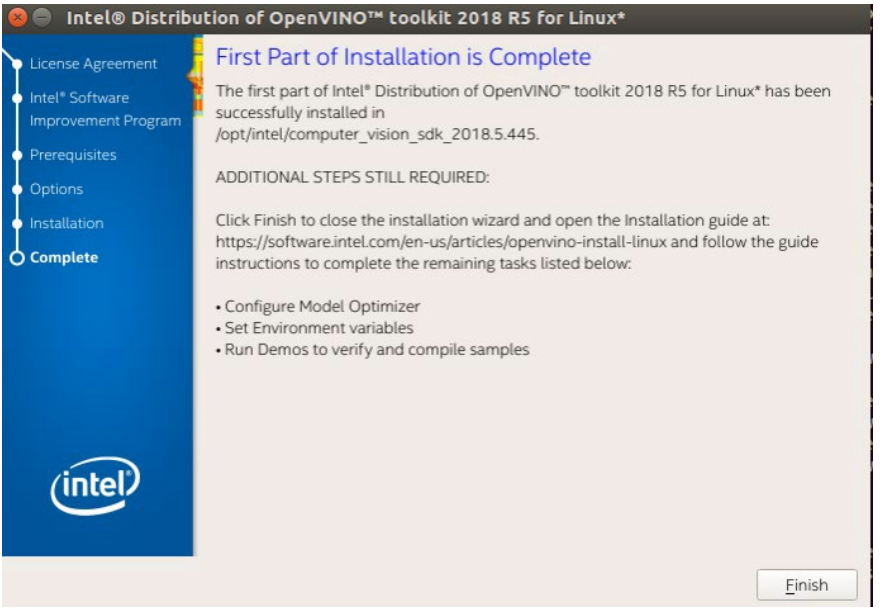
g. #7 click Next



h. #8 click install

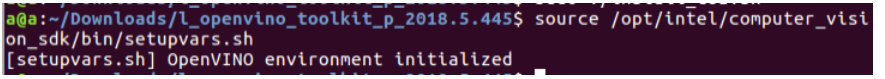


i. #9 Finish install



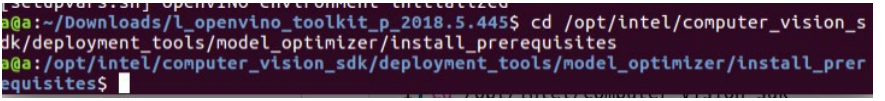
6. Build Sample

K. #1 Type: source /opt/intel/computer_vision_sdk/bin/setupvars.sh

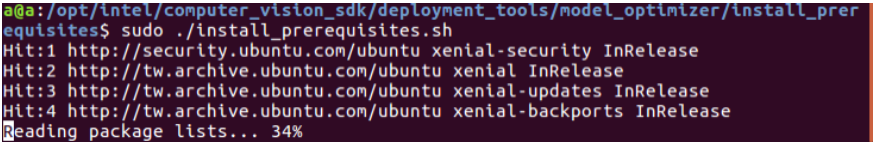


L. #2 Type:

cd/opt/intel/computer_vision_sdk/deployment_tools/model_optimizer/install_prerequisites



M. #3 Type: sudo ./install_prerequisites.sh



N. #4 Type: cd /opt/intel/computer_vision_sdk/deployment_tools/demo

```
a@a:/opt/intel/computer_vision_sdk/deployment_tools/model_optimizer/install_prer
equisites$ cd /opt/intel/computer_vision_sdk/deployment_tools/demo
a@a:/opt/intel/computer_vision_sdk/deployment_tools/demo$
```

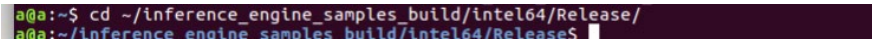
O. #5 Type: ./demo_squeezenet_download_convert_run.sh

```
a@a:/opt/intel/computer_vision_sdk/deployment_tools/demo$ ./demo_squeezenet_down
load_convert_run.sh
target_precision = FP32


################################################



Downloading the Caffe model and the prototxt
Installing dependencies
Run sudo -E apt -y install build-essential python3-pip virtualenv cmake libcairo
2-dev libpango1.0-dev libglib2.0-dev libgtk2.0-dev libswscale-dev libavcodec-dev
 libavformat-dev libgstreamer1.0-0 gstreamer1.0-plugins-base
Hit:1 http://tw.archive.ubuntu.com/ubuntu xenial InRelease
Hit:2 http://tw.archive.ubuntu.com/ubuntu xenial-updates InRelease
Hit:3 http://tw.archive.ubuntu.com/ubuntu xenial-backports InRelease
0% [Connecting to security.ubuntu.com (91.189.88.152)]
```

P. #6 Type: ./demo_security_barrier_camera.sh

```
a@a: /opt/intel/computer_vision_sdk/deployment_tools/demo
################################################

Demo completed successfully.

a@a:/opt/intel/computer_vision_sdk/deployment_tools/demo$ ./demo_security_barrie
r_camera.sh
target_precision = FP32
Run sudo -E apt -y install build-essential cmake libcairo2-dev libpango1.0-dev l
ibglib2.0-dev libgtk2.0-dev libswscale-dev libavcodec-dev libavformat-dev libgst
reamer1.0-0 gstreamer1.0-plugins-base
Hit:1 http://tw.archive.ubuntu.com/ubuntu xenial InRelease
Hit:2 http://tw.archive.ubuntu.com/ubuntu xenial-updates InRelease
Hit:3 http://tw.archive.ubuntu.com/ubuntu xenial-backports InRelease
Get:4 http://security.ubuntu.com/ubuntu xenial-security InRelease [107 kB]
Fetched 107 kB in 2s (47.5 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
20 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree
Reading state information... Done
build-essential is already the newest version (12.1ubuntu2).
libcairo2-dev is already the newest version (1.14.6-1).
libpango1.0-dev is already the newest version (1.38.1-1).
cmake is already the newest version (3.5.1-1ubuntu3).
gstreamer1.0-plugins-base is already the newest version (1.8.3-1ubuntu0.2).
libglib2.0-dev is already the newest version (2.48.2-0ubuntu4.1).
libgstreamer1.0-0 is already the newest version (1.8.3-1~ubuntu0.1).
libgtk2.0-dev is already the newest version (2.24.30-1ubuntu1.16.04.2).
libavcodec-dev is already the newest version (7:2.8.15-0ubuntu0.16.04.1).
libavformat-dev is already the newest version (7:2.8.15-0ubuntu0.16.04.1).
libswscale-dev is already the newest version (7:2.8.15-0ubuntu0.16.04.1).
0 upgraded, 0 newly installed, 0 to remove and 20 not upgraded.
Reading package lists... Done
Building dependency tree
Reading state information... Done
libpng12-dev is already the newest version (1.2.54-1ubuntu1.1).
```

Q. #7 Type: cd ~/inference_engine_samples_build/intel64/Release/



7. Run demo face detection by use MYRIAD

R. #1 Type: cd ~/inference_engine_samples_build/intel64/Release/

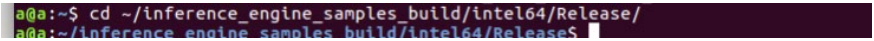
S. #2 Type: sudo su

T. #3 Type: source /opt/intel/computer_vision_sdk/bin/setupvars.sh

U. #4 Type: ./interactive_face_detection_demo -i "cam" -m /opt/intel/computer_vision_sdk/deployment_tools/intel_models/face-detection-adas-0001/FP16/face-detection-adas-0001.xml -d MYRIAD

8. Run demo face detection by use CPU

V. #1 Type: cd ~/inference_engine_samples_build/intel64/Release/



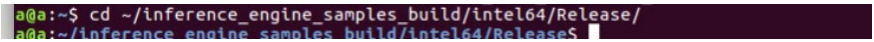
W. Type: sudo su

X. #3 Type: source /opt/intel/computer_vision_sdk/bin/setupvars.sh

Y. #4 Type: ./interactive_face_detection_demo -i "cam" -m /opt/intel/computer_vision_sdk/deployment_tools/intel_models/face-detection-adas-0001/FP16/face-detection-adas-0001.xml -d CPU

9. Run demo face detection by use GPU

Z. #1 Type: cd ~/inference_engine_samples_build/intel64/Release/



AA. #2 Type: sudo su

BB. #3 Type: source /opt/intel/computer_vision_sdk/bin/setupvars.sh

CC. #4 Type: ./interactive_face_detection_demo -i "cam" -m

DD. /opt/intel/computer_vision_sdk/deployment_tools/intel_models/face-detection-adas-0001/FP16/face-detection-adas-0001.xml -d GPU

10. Run demo face detection by use HDDL

    #1~#3 Just do it once

    EE. #1 Type: sudo gedit /opt/intel/computer_vision_sdk/inference_engine/external/hddl/config/hddl_autoboot.config

```
a@a:~/inference_engine_samples_build/intel64/Release$ sudo gedit /opt/intel/computer_vision_sdk/inference_engine/external/hddl/config/hddl_autoboot.config
```

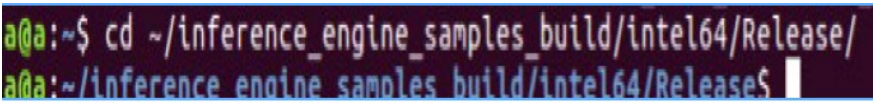
    FF. #2 edit total_device_num ,according to your myriadx device number to edit

*hddl_autoboot.config
/opt/intel/computer_vision_sdk/inference_engine/external/hddl/config

```
{
  "security_settings":
  {
    "user_group":                  "users"                                    // user grouph which can acess autoboot mutex files
  },

  "autoboot_settings":
  {
    "work_mode":                   "scan",                                    // mode of monitoring devices, options: {"scan", "hotplug"}
    "startup_wait_timeout":        100000,                                    // wait timeout for autoboot startup loading all firmwares to devices in milliseconds
    "abort_if_device_num_not_met": false,                                     // abort if still not all devices successfully load firmwares after timeout
    "total_device_num":            1                                          // total number of myriad devices to be used
  },

  "unboot_device_settings":
  {
    "vid":                         "0x03E7",                                  // uninitialized device USB vendor ID
    "pid":                         "0x2485"                                   // uninitialized device USB product ID
  },

  "booted_device_settings":
  {
    "vid":                         "0x03E7",                                  // booted device USB vendor ID
    "pid":                         "0xF63B"                                   // booted device USB product ID
  },

  "log_level":
  {
    "log_frequent":                "off",
```

    GG. #3 Type: reboot

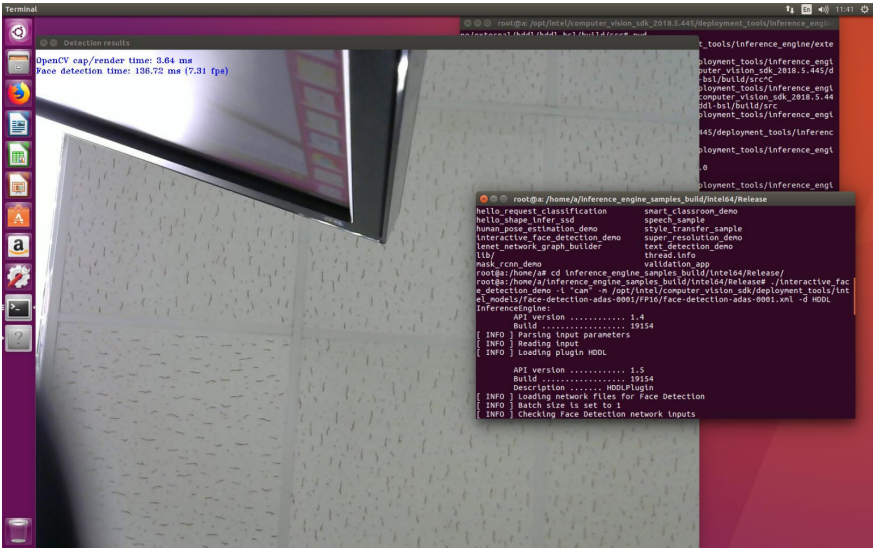
HH. #4 Type: cd ~/inference_engine_samples_build/intel64/Release/



II. #5 Type: sudo su

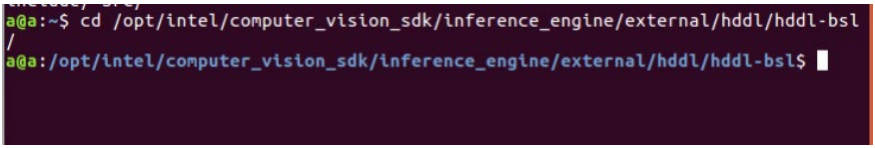
JJ. #6 Type: source /opt/intel/computer_vision_sdk/bin/setupvars.sh

KK. #7 Type: ./interactive_face_detection_demo -i "cam" -m /opt/intel/computer_vision_sdk/deployment_tools/intel_models/face-detection-adas-0001/FP16/face-detection-adas-0001.xml -d HDDL



11. Build Reset

LL. #1 Type: cd /opt/intel/computer_vision_sdk/inference_engine/external/hddl/hddl-bsl/



MM. #2 Type: sudo apt-get install libudev1

```
a@a:/opt/intel/computer_vision_sdk/inference_engine/external/hddl/hddl-bsl$ sudo
 apt-get install libudev1
[sudo] password for a:
Reading package lists... Done
Building dependency tree
Reading state information... Done
libudev1 is already the newest version (229-4ubuntu21.10).
0 upgraded, 0 newly installed, 0 to remove and 20 not upgraded.
a@a:/opt/intel/computer_vision_sdk/inference_engine/external/hddl/hddl-bsl$
```

NN. #3 Type: sudo apt-get install libudev-dev libjson-c-dev

```
a@a:/opt/intel/computer_vision_sdk/inference_engine/external/hddl/hddl-bsl$ sudo
 apt-get install libudev-dev libjson-c-dev
Reading package lists... Done
Building dependency tree
Reading state information... Done
libjson-c-dev is already the newest version (0.11-4ubuntu2).
libudev-dev is already the newest version (229-4ubuntu21.10).
```

OO. #4 Type: sudo su

PP. #6 Type: mkdir build

```
root@a:/opt/intel/computer_vision_sdk_2018.5.445/deployment_tools/inference_engi
ne/external/hddl/hddl-bsl# mkdir build
root@a:/opt/intel/computer_vision_sdk_2018.5.445/deployment_tools/inference_engi
ne/external/hddl/hddl-bsl#
```

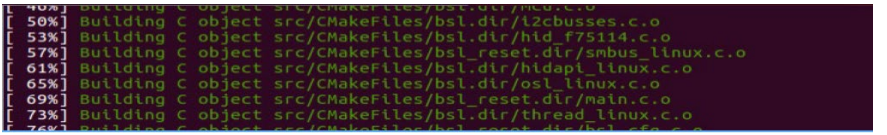
QQ. #7 Type: cd build

```
root@a:/opt/intel/computer_vision_sdk_2018.5.445/deployment_tools/inference_engi
ne/external/hddl/hddl-bsl# cd build
root@a:/opt/intel/computer_vision_sdk_2018.5.445/deployment_tools/inference_engi
ne/external/hddl/hddl-bsl/build#
```

RR. #8 Type: make –j

SS. #9 Type: make install

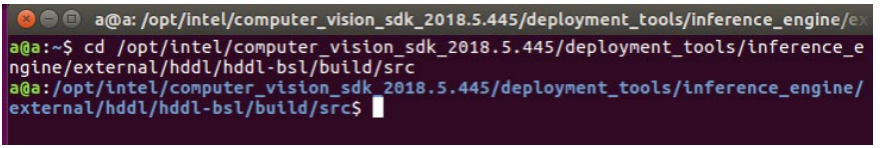
```
ne/external/hddl/hddl-bsl/build# make install
[ 50%] Built target bsl
[100%] Built target bsl_reset
Install the project...
-- Install configuration: ""
-- Installing: /usr/local/bin/bsl_reset
-- Installing: /usr/local/lib/libbsl.so.0
-- Installing: /usr/local/lib/libbsl.so
-- Installing: /usr/local/include/hddl-bsl.h
cp: cannot create regular file '/etc/udev/rules.d/98-hddlbsl.rules': No such fil
e or directory
-- /opt/intel/computer_vision_sdk_2018.5.445/deployment_tools/inference_engine/e
xternal/hddl/hddl-bsl/build/98-hddlbsl.rules was copied to /etc/udev/rules.d/98-
hddlbsl.rules
/sbin/ldconfig.real: /opt/intel/common/mdf/lib64/igfxcmrt64.so is not a symbolic
 link

/sbin/ldconfig.real: /opt/intel/mediasdk/lib64/libva.so.2 is not a symbolic link

/sbin/ldconfig.real: /opt/intel/mediasdk/lib64/libva-x11.so.2 is not a symbolic
link
```



12. Run Reset

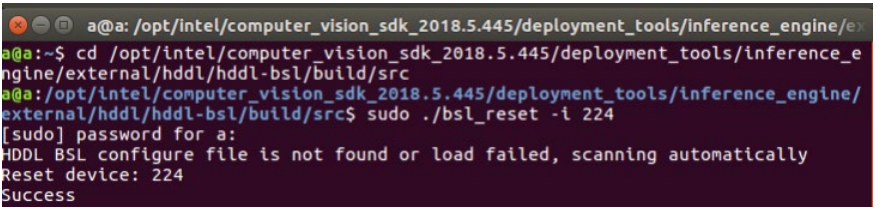
    TT. #1 Type: cd

    /opt/intel/computer_vision_sdk_2018.5.445/deployment_tools/inference_engine/external/hddl/hddl-bsl/build/src



    UU. #2 Type: sudo ./bsl_reset -i 224

*** 11100XXX : XXX is device 0-8 ,if device 0 , you should transform (11100000)2 to (224)10



    VV. Completed