



UP Xtreme i12 Edge DevCup Ubuntu 22.04 Installation Guide

REVISION HISTORY

Revision	Date	Comments	Author(s)
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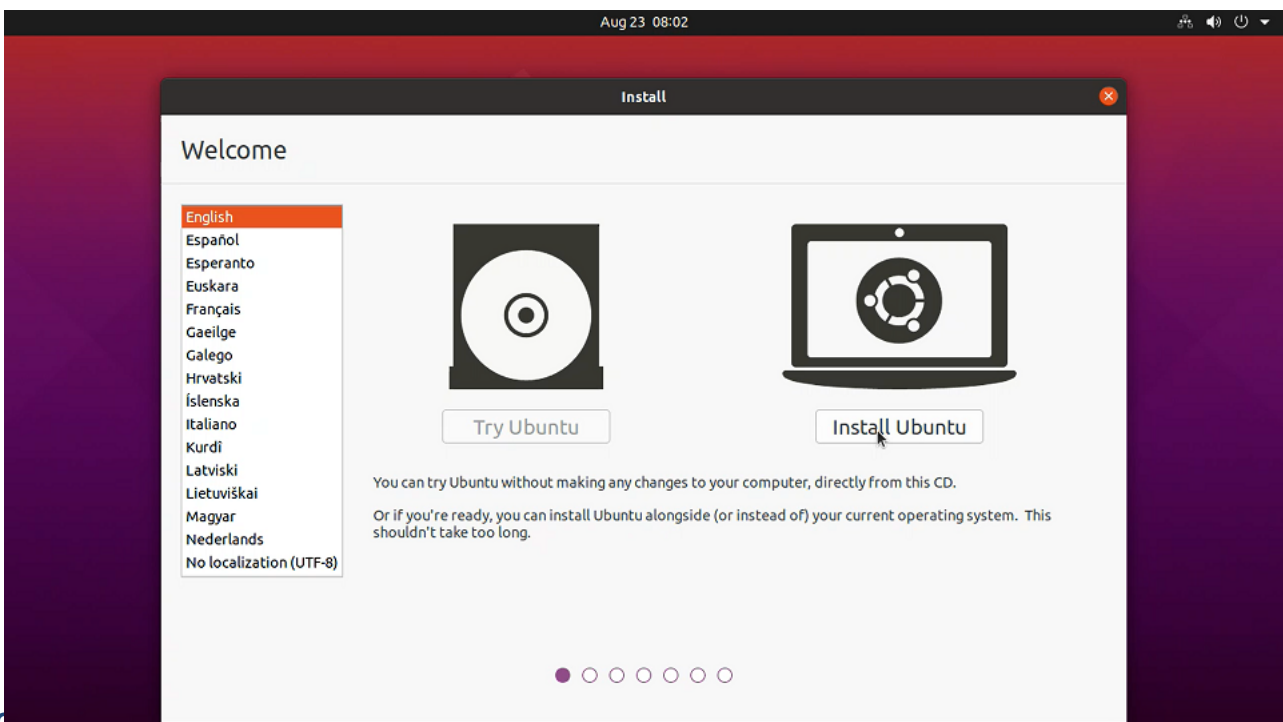
1. UP Xtreme i12 Edge *1
2. 12V Power adapter *1
3. Power cord- US type *1

2. Install Ubuntu 22.04

- #1 Prepare a bootable Ubuntu 22.04 live disk USB thumb drive
- #2 Insert the USB drive into one of the USB ports on the UP Xtreme i12 Edge
- #3 Power on the UP Xtreme i12 Edge and press the F7 key to enter the boot order menu
- #4 Select the Ubuntu 22.04 live USB drive



- #5 After the drive boots, install Ubuntu 22.04 onto the system.



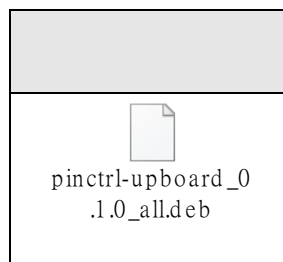
3. Install UP board new Linux pin controller driver

#1 Install DKMS

```
sudo apt install dkms (03:56)
```

#2 Install pin controller driver for HAT 40 pins

```
sudo dpkg -i pinctrl-upboard_0.1.0_all.deb (08:54)
```



```
a@a-UPX-ADLP01: ~/Desktop
a@a-UPX-ADLP01:~/Desktop$ sudo dpkg -i pinctrl-upboard_0.1.0_all.deb
(Reading database ... 169821 files and directories currently installed.)
Preparing to unpack pinctrl-upboard_0.1.0_all.deb ...
Module pinctrl-upboard-0.1.0 for kernel 5.15.0-1010-intel-lotg (x86_64).
Before uninstall, this module version was ACTIVE on this kernel.

upboard-fpga.ko:
- Uninstallation
  - Deleting from: /lib/modules/5.15.0-1010-intel-lotg/updates/dkms/
- Original module
  - No original module was found for this module on this kernel.
  - Use the dkms install command to reinstall any previous module version.

leds-upboard.ko:
- Uninstallation
  - Deleting from: /lib/modules/5.15.0-1010-intel-lotg/updates/dkms/
- Original module
  - No original module was found for this module on this kernel.
  - Use the dkms install command to reinstall any previous module version.

pinctrl-upboard.ko:
- Uninstallation
  - Deleting from: /lib/modules/5.15.0-1010-intel-lotg/updates/dkms/
- Original module
  - No original module was found for this module on this kernel.
  - Use the dkms install command to reinstall any previous module version.

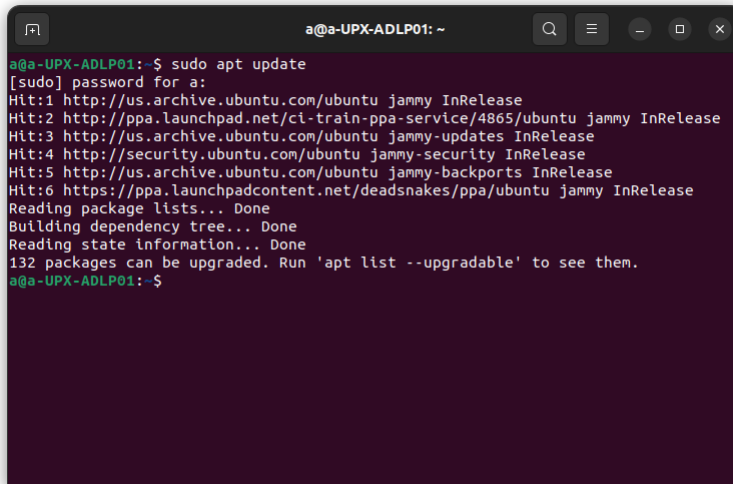
depmod...

update-initramfs.....
Deleting module pinctrl-upboard-0.1.0 completely from the DKMS tree.
Unpacking pinctrl-upboard (0.1.0) over (0.1.0) ...
Setting up pinctrl-upboard (0.1.0) ...
Loading new pinctrl-upboard-0.1.0 DKMS files...
Building for 5.15.0-1010-intel-lotg
Building initial module for 5.15.0-1010-intel-lotg
Secure Boot not enabled on this system.
Done.
```

4. Setup and Run OpenVINO in Docker

#1 Install Docker Utility with the following commands:

```
sudo apt update (10:01)
```



```
a@a-UPX-ADLP01: ~
a@a-UPX-ADLP01:~$ sudo apt update
[sudo] password for a:
Hit:1 http://us.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://ppa.launchpad.net/ci-train-ppa-service/4865/ubuntu jammy InRelease
Hit:3 http://us.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 http://us.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:6 https://ppa.launchpadcontent.net/deadsnakes/ppa/ubuntu jammy InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
132 packages can be upgraded. Run 'apt list --upgradable' to see them.
a@a-UPX-ADLP01:~$
```

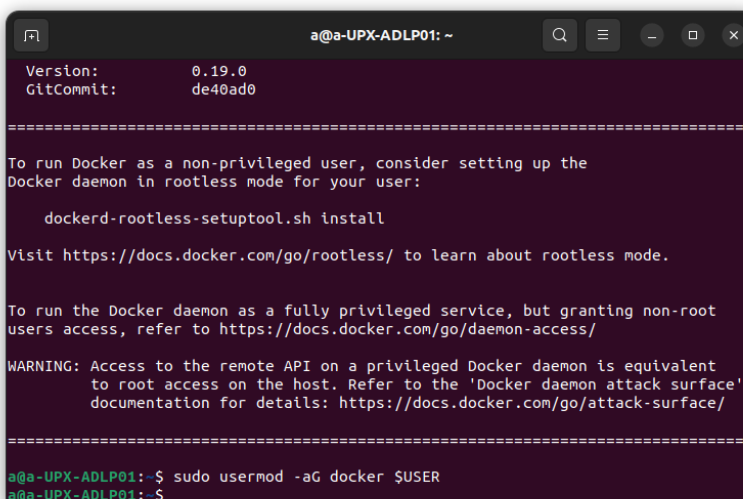
```
sudo apt-get remove docker docker-engine docker.io containerd runc (10:27)
```

```
sudo apt install curl (10:47)
```

```
curl -fsSL https://get.docker.com -o get-docker.sh (11:12)
```

```
sudo sh get-docker.sh (11:30)
```

```
sudo usermod -aG docker $USER (12:55)
```



```
a@a-UPX-ADLP01: ~
Version:      0.19.0
GitCommit:   de40ad0
=====
To run Docker as a non-privileged user, consider setting up the
Docker daemon in rootless mode for your user:

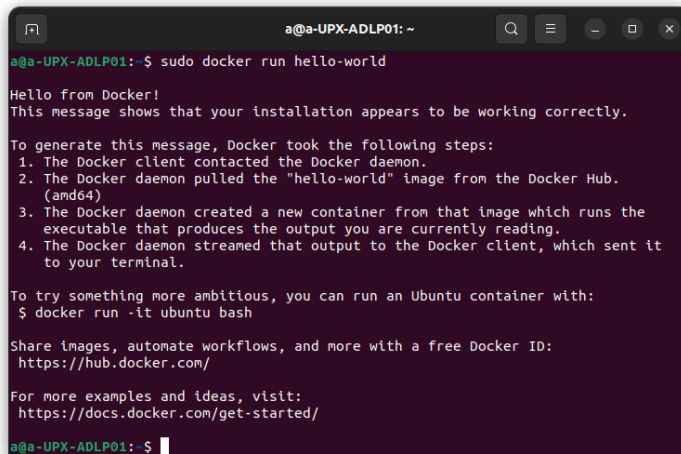
    dockerd-rootless-setuptools.sh install

Visit https://docs.docker.com/go/rootless/ to learn about rootless mode.

To run the Docker daemon as a fully privileged service, but granting non-root
users access, refer to https://docs.docker.com/go/daemon-access/

WARNING: Access to the remote API on a privileged Docker daemon is equivalent
to root access on the host. Refer to the 'Docker daemon attack surface'
documentation for details: https://docs.docker.com/go/attack-surface/
=====
a@a-UPX-ADLP01:~$ sudo usermod -aG docker $USER
a@a-UPX-ADLP01:~$
```

`sudo docker run hello-world` (13:08)



```
a@a-UPX-ADLP01: ~
a@a-UPX-ADLP01: $ sudo docker run hello-world
Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

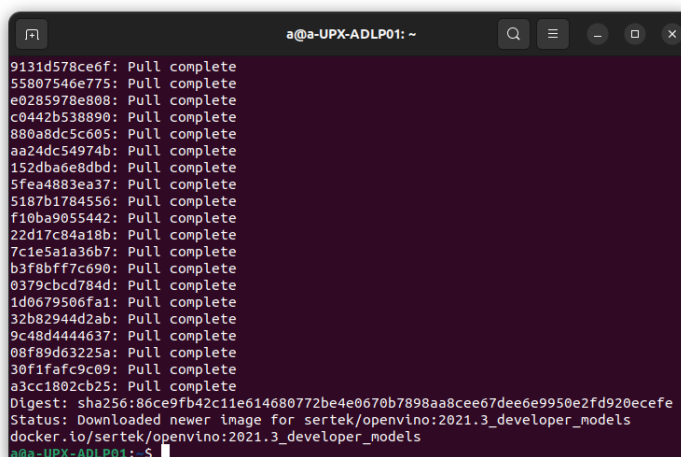
Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/
a@a-UPX-ADLP01: $
```

#2 Get docker image and verify installation

Download Docker image

`sudo docker pull sertek/opencvino:2021.3_developer_models` (13:29)



```
a@a-UPX-ADLP01: ~
9131d578ce6f: Pull complete
55807546e775: Pull complete
e0285978e808: Pull complete
c0442b538890: Pull complete
880a8dc5c605: Pull complete
aa24dc54974b: Pull complete
152dba6e8dbd: Pull complete
5fea4883ea37: Pull complete
5187b1784556: Pull complete
f10ba9055442: Pull complete
22d17c84a18b: Pull complete
7c1e5a1a36b7: Pull complete
b3f8bff7c690: Pull complete
0379cbcd794d: Pull complete
1d0679506fa1: Pull complete
32b82944d2ab: Pull complete
9c48d4444637: Pull complete
08f89d63225a: Pull complete
30f1fafc9c09: Pull complete
a3cc1802cb25: Pull complete
Digest: sha256:86ce9fb42c11e614680772be4e0670b7898aa8cee67dee6e9950e2fd920ecef
Status: Downloaded newer image for sertek/opencvino:2021.3_developer_models
docker.io/sertek/opencvino:2021.3_developer_models
a@a-UPX-ADLP01: $
```

Download Sample Video

`wget -O ~/Downloads/NewVideo2.mp4 https://github.com/incluit/OpenVino-For-SmartCity/raw/master/data/NewVideo2.mp4` (19:26)

#2 Run Object Detection Demo

```
sudo docker run -it -v /tmp/.X11-unix:/tmp/.X11-unix -e DISPLAY=$DISPLAY -v
~/Downloads:/mnt --device /dev/dri:/dev/dri --group-add=$(stat -c "%g" /dev/dri/render*) -
-rm your_dockerhub_id/openvino:2021.3_developer_models (20:25)
```

cd (22:16)

```
a@a-UPX-ADLP01:~$ sudo docker run -it -v /tmp/.X11-unix:/tmp/.X11-unix -e DISPLAY
Y=$DISPLAY -v ~/Downloads:/mnt --device /dev/dri:/dev/dri --group-add=$(stat -c
"%g" /dev/dri/render*) --rm sertek/openvino:2021.3_developer_models
groups: cannot find name for group ID 110
error: XDG_RUNTIME_DIR not set in the environment.
[setupvars.sh] OpenVINO environment initialized
openvino@92d11d7fd3a1:/opt/intel/openvino_2021.3.394$ cd
openvino@92d11d7fd3a1:~$ ls -l
total 12648
-rwxrwxr-x 1 root root 12914374 Jun 21 2021 NewVideo2.mp4
-rwxrwxr-x 1 root root 2120 May 12 2021 benchmark_models_cmds.txt
-rwxrwxr-x 1 root root 3206 May 28 2021 bonus_classifications_cmds.txt
-rwxrwxr-x 1 root root 2601 May 29 2021 bonus_misc_cmds.txt
-rwxrwxr-x 1 root root 1192 May 31 2021 bonus_object_detections_cmds.txt
-rwxrwxr-x 1 root root 1036 Jun 2 2021 bonus_semantic_cmds.txt
-rwxrwxr-x 1 root root 435 Jun 21 2021 demo_smart_city_with_counting.sh
-rwxr-xr-x 1 root root 390 May 27 2021 my_demo.sh
-rwxr-xr-x 1 root root 786 May 12 2021 run_command.py
-rwxr-xr-x 1 root root 392 Jun 21 2021 smartcity_demo.sh
openvino@92d11d7fd3a1:~$
```

Open new terminal window

```
sudo docker cp <CONTAINER_DIR>/smartcity_demo.sh <HOST_DIR>/smartcity_demo.sh
(23:13)
```

Replace GPU with CPU

```
vim <HOST_DIR>/smartcity_demo.sh (25:51)
```

```
a@a-UPX-ADLP01: /
source /opt/intel/openvino/bin/setupvars.sh
cd
gst-launch-1.0 filesrc location=/mnt/NewVideo2.mp4 ! decodebin ! gvadetect model
=/opt/intel/openvino_models/public/yolo-v3-tf/FP16-INT8/yolo-v3-tf.xml model-pro
c=/opt/intel/openvino/data_processing/dl_streamer/samples/model_proc/yolo-v3-tf.
json device=GPU ! queue ! gwatermark ! videoconvert ! fpsdisplaysink video-sin
k=xvimagesink sync=false
```

```

a@a-UPX-ADLP01: /
source /opt/intel/opencvino/bin/setupvars.sh
cd
gst-launch-1.0 filesrc location=/mnt/NewVideo2.mp4 ! decodebin ! gvadetect model
=/opt/intel/opencvino_models/public/yolo-v3-tf/FP16-INT8/yolo-v3-tf.xml model-pro
c=/opt/intel/opencvino/data_processing/dl_streamer/samples/model_proc/yolo-v3-tf.
json device=CPU ! queue ! gwawatermark ! videoconvert ! fpsdisplaysink video-sin
k=xvimagesink sync=false

```

sudo docker cp <HOST_DIR>/smartcity_demo.sh <CONTAINER_DIR>/smartcity_demo.sh
(27:03)

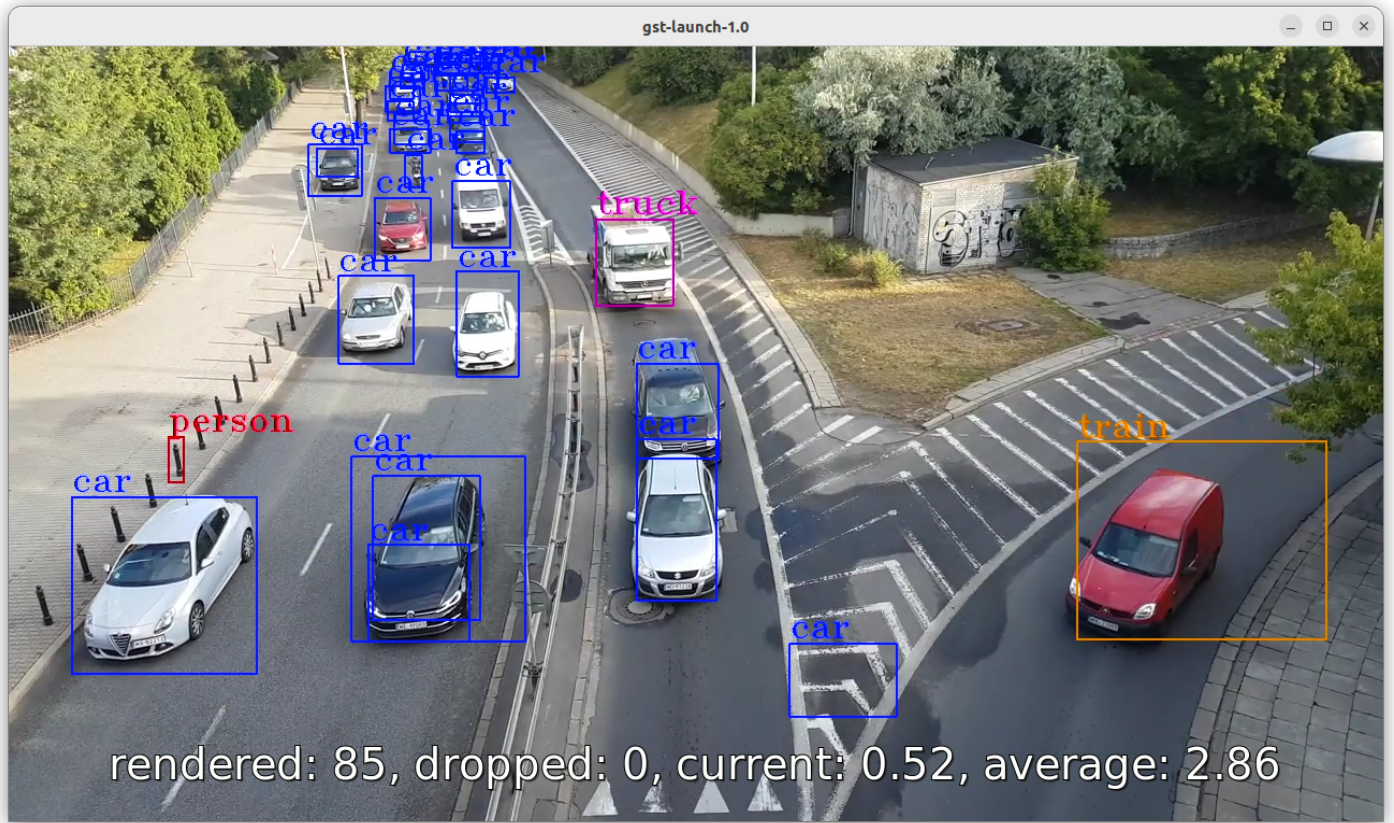
Go back to previous terminal window

./smartcity_demo.sh (28:11)

```

openvino@92d11d7fd3a1: ~
-rwxrwxr-x 1 root root 12914374 Jun 21 2021 NewVideo2.mp4
-rwxrwxr-x 1 root root 2120 May 12 2021 benchmark_models_cmds.txt
-rwxrwxr-x 1 root root 3206 May 28 2021 bonus_classifications_cmds.
txt
-rwxrwxr-x 1 root root 2601 May 29 2021 bonus_misc_cmds.txt
-rwxrwxr-x 1 root root 1192 May 31 2021 bonus_object_detections_cmd
s.txt
-rwxrwxr-x 1 root root 1036 Jun 2 2021 bonus_semantic_cmds.txt
-rwxrwxr-x 1 root root 435 Jun 21 2021 demo_smart_city_with_counti
ng.sh
-rwxr-xr-x 1 root root 390 May 27 2021 my_demo.sh
-rwxr-xr-x 1 root root 786 May 12 2021 run_command.py
-rwxr-xr-x 1 openvino openvino 392 Jul 19 08:50 smartcity_demo.sh
openvino@92d11d7fd3a1:~$ ./smartcity_demo.sh
[setupvars.sh] OpenVINO environment initialized
error: XDG_RUNTIME_DIR not set in the environment.
Setting pipeline to PAUSED ...
Pipeline is PREROLLING ...
Redistribute latency...
Pipeline is PREROLLED ...
Setting pipeline to PLAYING ...
New clock: GstSystemClock
Redistribute latency...

```



For more details, visit the following link:

https://hackmd.io/oRH7WWxHS_SyvZehevA8vg