

EVA SDK Installation Guide for ARM

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Preface

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Revision History

Revision	Description	Date
1.0	Initial release	2020-10-07
1.1	Release for EVA SDK R3.5	2021-07-30

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1 Introduction

This chapter describes the installation of the following software.

- GStreamer RTSP Plugin and GStreamer Python Plugin
- Hikrobot software
- FLIR software
- ADLINK EVA SDK

The following table lists the specified software versions.

Item	Version
OS	Ubuntu 18.04 LTS aarch64
GStreamer	1.14.5
NVIDIA® JetPack	4.4
Python	3.6
pylon	5.2.0
Hikrobot MVS	2.0.0
FLIR Spinnaker SDK	2.0.0.147

NVIDIA® JetPack includes the following software versions.

Item	Version
NVIDIA® DeepStream	5.0
NVIDIA® CUDA	10.2
NVIDIA® TensorRT	7.1.3
NVIDIA® cuDNN	8.0.5
OpenCV	4.1.1

The following table lists the estimated required installation space when installing the software under Ubuntu 18.04 aarch64. The required installation space includes the install file (.deb, .run) package size.

Software	Required Installation Space
GStreamer Python Plugin	600MB
Pylon	430MB (deb file: 90MB)
Hikrobot MVS	280MB (zip file: 130MB)
FLIR Spinnaker	260MB (gz file: 62MB)
ADLINK EVA SDK	40MB (run file: 10MB)

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2 Installing the GStreamer RTSP Plugin

2.1 Install RTSP plugin for GStreamer (Optional)

If data will be sent over via an RTSP server, the system must have the RTSP plugin for GStreaming installed. Use the following command to install the RTSP plugin.

```
$ sudo apt install gstreamer1.0-rtsp
```

Use the following command to verify that the plugin has been installed.

```
$ gst-inspect-1.0 rtspclientsink
```

```
adlink@adlink-desktop: ~
adlink@adlink-desktop:~$ gst-inspect-1.0 rtspclientsink
Factory Details:
  Rank: none (0)
  Long-name: RTSP RECORD client
  Klass: Sink/Network
  Description: Send data over the network via RTSP RECORD(RFC 2326)
  Author: Jan Schmidt <jan@centricular.com>

Plugin Details:
  Name: rtspclientsink
  Description: RTSP client sink element
  Filename: /usr/lib/aarch64-linux-gnu/gstreamer-1.0/libgstrtspclientsink.so
  Version: 1.14.5
  License: LGPL
  Source module: gst-rtsp-server
  Source release date: 2019-05-29
  Binary package: GStreamer RTSP Server Library source release
  Origin URL: Unknown package origin

GObject
+----GInitiallyUnowned
  +----GstObject
    +----GstElement
      +----GstBin
        +----GstRTSPClientSink

Implemented Interfaces:
  GstChildProxy
  GstURISinkHandler

Pad Templates:
  SINK template: 'sink_%u' Sink (ximagesink) output with
  Availability: On request
  Capabilities:
  ANY
  Type: GstRtspClientSinkPad
  Pad Properties:
  payloader : The payload element to use (NULL = default automatically selected)
  flags: readable, writable
  Object of type "GstElement"
```

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3 Installing the GStreamer Python Plugin

GStreamer is built on the GLib and GObject portable libraries which are compatible with Python. Gstreamer can be used in two ways: by writing GStreamer applications, or by writing GStreamer Python elements that can be scanned by the GStreamer Python plugin loader and registered as a plugin in GObject. The following sections describe how to install the GStreamer Python plugin.

3.1 Install the Required Packages

```
$ sudo apt-get update
$ sudo apt-get install python3-pip python-gi-dev python3-gst-1.0
```

If your platform is using Python 2.7, change the `python3-gst-1.0` package to `python-gst-1.0`.

3.2 Install the GStreamer Python Plugin Loader

Currently, the Debian GStreamer Python package includes GObject Introspection files but does not include the GStreamer Python plugin loader, requiring the use of a GStreamer Python application.

GStreamer Python plugins cannot be scanned and registered in applications like `gst-launch-1.0` or `gst-inspect-1.0`, so a GStreamer Python plugin loader must be built.

1. Clone the GStreamer `gst-python` repository

```
$ git clone -b 1.14 https://github.com/GStreamer/gst-python.git
```

2. Install the build tool

```
$ pip3 install --user scikit-build
$ pip3 install --user meson ninja
```

When using Python 2.7, call `pip` instead of `pip3`.

3. Add the Python binary search path

```
$ export PATH=~/.local/bin:$PATH
```

If installing the `meson` package via `apt` installs an old version of `meson`, make sure the `meson` binary installed by `pip3` can be found by first specifying where to access the Python binary.

4. Build and install `gst-python`

```
$ cd gst-python
$ meson _build -Dprefix=$PWD/local
$ ninja -C _build install
```

At this point, it is important not to overwrite the previously installed GStreamer Python files which can possibly have a negative impact on the system. Instead, install GStreamer Python to a local folder and then copy only the required files.

5. Copy GStreamer Python plugin loader

The previous build steps generated two kinds of files, GObject introspection files and the GStreamer Python plugin loader in the following directory structure.

Gst-python install directory structure

```
local
├── lib
│   ├── python3.6
│   │   ├── site-packages
│   │   │   └── gi
│   │   │       └── overrides
│   │   │           ├── _gi_gst.cpython-36m-x86_64-linux-gnu.so
│   │   │           ├── GstPbutils.py
│   │   │           └── Gst.py
│   └── aarch64-linux-gnu
│       ├── gstreamer-1.0
│       └── libgstpython.so
```

Copy libgstpython.so to the GStreamer system plugin folder, or other plugin folders as necessary.

Copy the required library

```
$ sudo cp local/lib/aarch64-linux-gnu/gstreamer-1.0/libgstpython.so
/usr/lib/aarch64-linux-gnu/gstreamer-1.0
```

6. Install the required Python packages

```
$ sudo apt-get install python3-numpy python3-opencv
$ sudo pip3 install boto3
```

Note:

The following message can be ignored when executing pip with sudo.

```
The directory '/home/adlink/.cache/pip/http' or its parent directory is not owned
d by the current user and the cache has been disabled. Please check the permissi
ons and owner of that directory. If executing pip with sudo, you may want sudo's
-H flag.
The directory '/home/adlink/.cache/pip' or its parent directory is not owned by
the current user and caching wheels has been disabled. check the permissions and
owner of that directory. If executing pip with sudo, you may want sudo's -H fla
g.
```

7. Check for installed Python plugins

```
$ cd .. # Stay in gst-python will cause python local wrong gi module in
gst-python folder
$ GST_DEBUG=pyplugin:7 gst-inspect-1.0 python
```

If the Python plugins are found, the installation has been successful.

4 Installing Hikrobot Software (Optional)

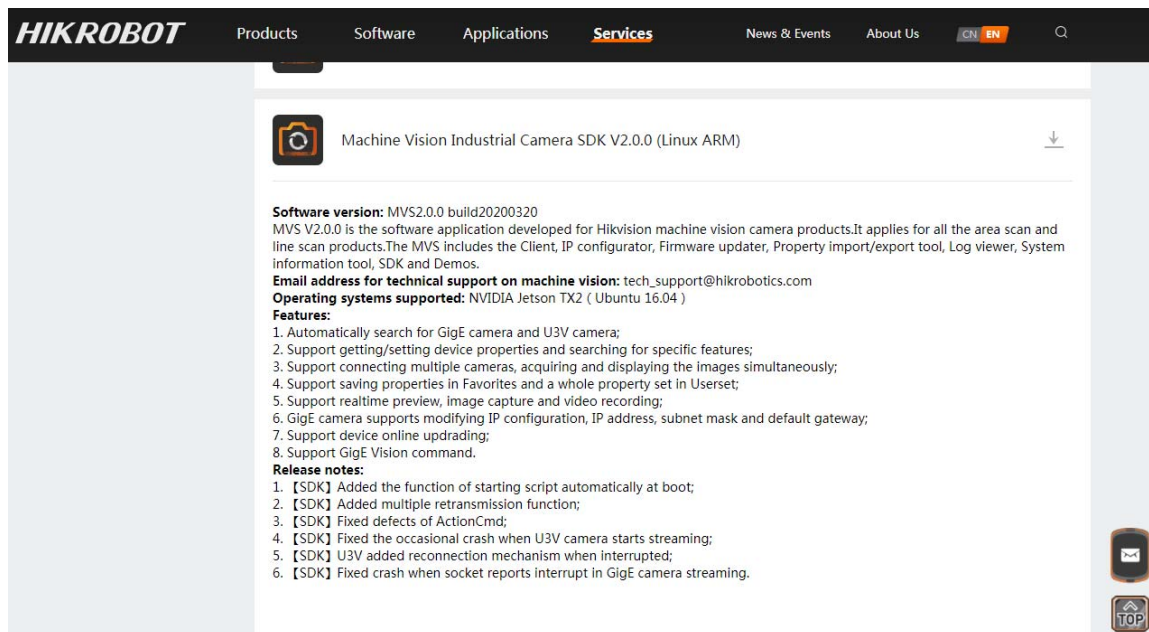
If you are not using a Hikrobot camera, this chapter can be skipped.

If Hikrobot cameras are used, the Hikrobot MVS Software must be installed.

Download the Hikrobot installer from: <https://en.hikrobotics.com/machinevision/service/download?module=0>

The recommended software versions are:

- Version: Machine Vision Industrial Camera SDK V2.0.0 (Linux ARM)
- Operating System: ARM 64-bit



Run the following commands, and then follow the on-screen instructions to complete the installation process.

```
$ unzip "MVS_2.0.0_20200312(Linux ARM).zip"
$ cd "MVS_2.0.0_20200312(Linux ARM) "
$ tar xvfz MVS-2.0.0_aarch64_20200312.tar.gz
$ cd MVS-2.0.0_aarch64_20200312
$ sudo ./setup.sh
```

After installation, connect the camera and run the MVS software to verify that it works. The file should be at /opt/MVS/bin.

Note:

The above installation steps are for reference only. For more specific installation instructions, refer to the official documentation, or contact Hikrobot at <https://en.hikrobotics.com/contactus>.

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5 Installing FLIR Software (Optional)

This chapter covers the installation of required software for use with FLIR cameras.

If you are not using a FLIR camera, this chapter can be skipped.

5.1 Uninstall Non-specified Version

If the system has a non-specified version of the FLIR Spinnaker software, run the uninstall script under the Spinnaker installation package to remove it.

```
$ cd spinnaker-<version>
$ sudo ./remove_spinnaker_arm.sh
```

5.2 Install FLIR Spinnaker Software

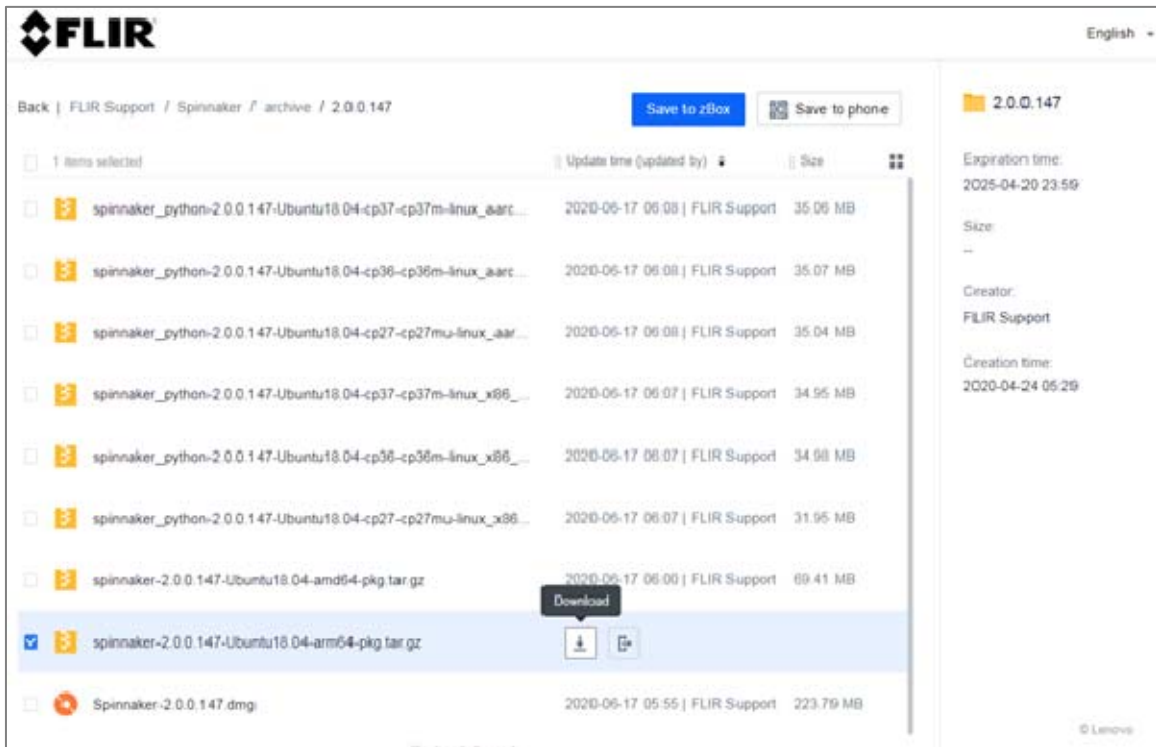
If FLIR cameras are used, the FLIR Spinnaker Software Suite for Windows must be installed.

Download the FLIR Spinnaker installer from: <https://www.flir.asia/products/spinnaker-sdk/>

The recommended software versions are:

- Version: spinnaker-2.0.0.147-Ubuntu18.04-arm64
- Operating System: Linux 64 bit

File path: FLIR Support/Spinnaker/archive/2.0.0.147



Run the following commands and then follow the on-screen instructions to complete the installation.

```
$ tar xvfz spinnaker-2.0.0.147-Ubuntu18.04-arm64-pkg.tar.gz
$ cd spinnaker-2.0.0.147-arm64
$ sudo sh install_spinnaker_arm.sh
$ sudo reboot
```

Note:

During installation, you **MUST** enter a username to add a new member.

For example, enter 'adlink' for the user name.

```
Adding new members to usergroup flirimaging...
Usergroup flirimaging is empty
To add a new member please enter username (or hit Enter to continue):
$ adlink
Adding user adlink to group flirimaging group. Is this OK?
[Y/n] $ Y
Added user adlink
Current members of flirimaging group: adlink
To add a new member please enter username (or hit Enter to continue):
$
```

After installing, insert the camera device and run the following command to verify.

```
$ spinview
```

Note:

For more information, refer to <https://www.flir.com/support-center/iis/machine-vision/application-note/using-spinnaker-on-arm-and-embedded-systems/>

If you have any questions, go to <https://www.flir.com/>.

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6 Installing ONNX Runtime

This chapter covers the installation of required software for use with the ONNX Runtime inference engine.

Download ONNX Runtime v1.8.0 for python 3.6 from https://elinux.org/Jetson_Zoo#ONNX_Runtime, or <https://nvidia.app.box.com/s/bfs688apyvor4eo8sf3y1oqtnarwafww>

Run the following commands to install ONNX Runtime.

```
$ pip3 install --upgrade pip cython protobuf
$ pip3 install numpy==1.19.4
$ pip3 install pillow
$ cd Downloads
$ pip3 install onnxruntime_gpu-1.8.0-cp36-cp36m-linux_aarch64.whl
```

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7 Installing the ADLINK EVA SDK

7.1 Remove Previous ADLINK EVA SDK Versions

If you have a previously installed version of the ADLINK EVA SDK, remove it with the following command:

```
$ sudo /opt/adlink/eva/uninstall.sh
```

If the install path has been changed, specified the correct path with:

```
$ sudo [INSTALL_DIR]/uninstall.sh
```

INSTALL_DIR enters the specified path.

Note	When uninstalling the ADLINK EVA SDK, the folder specified with INSTALL_DIR will be deleted.
-------------	--

7.2 Run the Required Commands for EVA IDE

```
$ sudo ln -snf /usr/share/fonts/truetype/dejavu /lib/fonts
$ sudo apt-get install graphviz
$ sudo systemctl stop nvargus-daemon
$ sudo systemctl disable nvargus-daemon
```

7.3 Download and Install the ADLINK EVA SDK

Download the ADLINK EVA SDK installation package and copy it to your Linux Ubuntu 18.04 aarch64 system.

Change mode and run install package

```
$ chmod +x EVA_SERP_xxxx.run
$ sudo ./EVA_SERP_xxxx.run
```

xxxx is the version and the install path is */opt/adlink/eva*.

Select the EVA SDK plugins to be installed.

```
Select GStreamer plugin to install. (Separate with comma, for example, "2,3,4").
1. All plugins
2. TensorRT inference plugin
3. Pylon plugin
4. HIK plugin
5. FLIR plugin
```

For example, to install the TensorRT inference plugin and the Pylon plugin, enter 3,4. To install all plugins, including the TensorRT inference plugin, the Pylon plugin, the Hik plugin and the Flir plugin, enter 1.

Notes:

1. TensorRT is only supported on NVIDIA platforms.
2. Before installing the EVA SDK, you must ensure the corresponding software packages have been installed. If the plugins are installed but there are no corresponding libraries, when the GStreamer command runs for the first time, it will display messages to warn that the related libraries are missing, and the installed plugins will not work.

Other commands can be used to install the ADLINK EVA SDK.

- Use the `-s` command option to install all the plugins in silent mode. The install path is */opt/adlink/eva*.

```
$ sudo ./EVA_SERP_xxxx.run -- -s
```

7.4 Set Environment Variables

Set environment variables for the ADLINK EVA SDK

```
$ source /opt/adlink/eva/scripts/setup_eva_envs.sh
```

The script will set up the environment variables of the following installed software.

- Pylon
- ADLINK EVA SDK

If the software has no corresponding libraries, the script will not set up the corresponding environment variables.

Note:

The environment variables are removed when closing the command prompt or terminal.

Safety Instructions

Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.

- Please read these safety instructions carefully.
- Please keep this User's Manual for later reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment, turn off the power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
 - Keep equipment away from water or liquid sources.
 - Keep equipment away from high heat or high humidity.
 - Keep equipment properly ventilated (do not block or cover ventilation openings).
 - Make sure to use recommended voltage and power source settings.
 - Always install and operate equipment near an easily accessible electrical socket-outlet.
 - Secure the power cord (do not place any object on/over the power cord).
 - Only install/attach and operate equipment on stable surfaces and/or recommended mountings.
 - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.
- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

Getting Service

Ask an Expert: <http://askanexpert.adlinktech.com>

ADLINK Technology, Inc.

Address: 9F, No.166 Jian Yi Road, Zhonghe District
New Taipei City 235, Taiwan
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.

Address: 5215 Hellyer Avenue, #110, San Jose, CA 95138, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.

Address: 300 Fang Chun Rd., Zhangjiang Hi-Tech Park, Pudong New Area
Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology GmbH

Address: Hans-Thoma-Straße 11
D-68163 Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621 43214-30
Email: germany@adlinktech.com

Please visit the Contact page at www.adlinktech.com for information on how to contact the ADLINK regional office nearest you.