DepthVista

DepthVista IMU Application Build Manual

e-con Systems

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Contents

Introduction to DepthVista

DepthVista is a 3D camera based on Time of Flight (TOF) technology, USB Video Class (UVC) compliant, USB 3.2 Gen 1 SuperSpeed USB camera from e-con Systems, a leading Embedded Product Design Services Company which specializes in advanced camera solutions.

DepthVista is an RGB-D camera containing both RGB and TOF depth cameras. RGB camera has 1/2.6" AR0234CS CMOS digital image sensor with global shutter from onsemi™. It has dedicated high performance color image signal processor. TOF depth camera has 1/4" CCD sensor and dedicated depth processor. DepthVista is a two-board solution containing camera board with the USB 3.2 Gen 1 interface and laser board along with enclosure.

This document describes how to build the DepthVista IMU application step by step on the host PC (Linux).

Prerequisites

The prerequisites are as follows:

- DepthVista console application source code
- CMake (version 3.5 and above)
- DepthVistaSDK

Description

DepthVista has USB interface controller with USB Type-C connector to interface with the host PC. It is a ready-to-manufacture camera board with all the necessary firmware built-in and is compatible with the UVC version 1.0 standard. You can integrate this camera into the products, and this helps to cut short the time-to-market.

DepthVista is a UVC compatible and will work with the standard drivers available with Windows and Linux OS. There is no need for any additional driver installation. So, video streaming through UVC is possible without any special drivers on OSes that have built-in support for UVC standards.

Table 1: DepthVista supported Format, Resolutions, and Frame Rates

S.No	Format	Camera Mode	Resolution	Frame Rate (fps) USB 3.2 Gen 1
1	UYVY	RGB Mode	2.3MP (1920 x 1200)	30
			FHD (1920 x 1080)	30
			HD (1280 x 720)	60

			VGA (640 x 480)	60
2	Y16 (RAW 12-bit)	TOF Mode	Depth (640 x 480)	30
			IR (640 x 480)	30
			Depth + IR (640 x 960)	30
3		RGB-D Mode	1280 x 600 (RGB-D)	30
			1443 X 960 (RGB-D)	30

The TOF camera in DepthVista can be used in two depth modes as follows:

- **Far Mode**: Effective depth range is between 1000 mm to 6000 mm.
- **Near Mode**: Effective depth range is between 200 mm to 1200 mm.

The TOF camera controls of DepthVista are as follows:

- TOF Data Mode
- TOF Depth Range
- TOF Mask
- TOF Gain

The RGB camera controls of DepthVista are as follows:

- Brightness
- Contrast
- Saturation
- Gamma
- Gain
- Sharpness
- White Balance
- Exposure
- Power line frequency

Installing DepthVistaSDK for Linux

This section describes the installation of DepthVistaSDK which is essential for building DepthVista Application.

The steps to install the DepthVistaSDK are as follows:

1. Run the following command to extract the **package** file.

```
unzip -X <packageName.zip>
```

<Extracted Directory>\Linux\Bin\Ubuntu18.04\x64\SDK will have an install.sh file.

Note: For Ubuntu 20.04 the install.sh file will be present in **<Extracted Directory>\Linux\Bin\Ubuntu20.04\x64\SDK.**
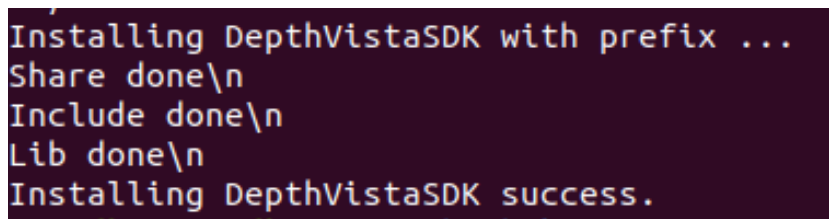
2. Open the folder containing install.sh in terminal.

3. Run the following command to give executable permission for install.sh file.

```
chmod +x install.sh
```

4. Run the following command to install the **DepthVistaSDK**.

```
sudo ./install.sh
```

Once installation is success, **Installation DepthVistaSDK success** message appears.

Fig 1: Installation success screenshot.

Building DepthVista IMU Application

This section will discuss about building DepthVista console application.

The steps to build DepthVista console application are as follows:

<Extracted Directory>\linux\Source\CPP\DepthVistaIMU will have the DepthVistaIMU source code along with CMakeLists.txt file. Open that folder in terminal.

1. Run the following command to create a build directory and change the terminal to build directory on successful creation of build directory .

```
mkdir build && cd build
```

2. Run the following command to create make file from CMakeLists.txt.

```
cmake ..
```

3. Run the following command to generate DepthVistaIMU executable file using the make file.

```
sudo make
```

Once the make is completed successfully, DepthVistaIMU executable will be generated.

4. Run the DepthVistaIMU application using the following command.

```
sudo ./DepthVistaIMU
```

5. Follow the *DepthVista_IMU_Application_User_Manual.pdf* provided in the package for understanding the usage of IMU application.

Error: error while loading shared libraries: libdc1394.so.25: cannot open shared object file: No such file or directory

Warning: libdc1394.so.25, needed by /usr/lib/libopencv_world.so.4.2.0, not found

Run the following command in terminal to solve this issue.

```
sudo apt-get install libdc1394-25
```

1. **We have already installed OpenCV version in PC, will it make conflict with the DepthVista SDK?**

   Pre-installed OpenCV version will not make any conflict with DepthVistaSDK, because the libs and header files required by DepthVistaSDK will be added in the installation steps itself.

   Since DepthVistaSDK is developed with OpenCV version 4.2.0, make sure any application using DepthVistaSDK also uses OpenCV version 4.2.0.

Contact Us

If you need any support on DepthVista product, please contact us using the Live Chat option available on our website - https://www.e-consystems.com/

Creating a Ticket

If you need to create a ticket for any type of issue, please visit the ticketing page on our website - https://www.e-consystems.com/create-ticket.asp

RMA

To know about our Return Material Authorization (RMA) policy, please visit the RMA Policy page on our website - https://www.e-consystems.com/RMA-Policy.asp

General Product Warranty Terms

To know about our General Product Warranty Terms, please visit the General Warranty Terms page on our website - https://www.e-consystems.com/warranty.asp

Revision History

Rev	Date	Description	Author
1.0	02-November-2022	Initial Draft	Camera Products
1.1	04-November-2022	Removed installation steps for OpenCV	Camera Products
1.2	02-June-2023	Document Update	Camera Products
1.3	15-June-2023	Document Update	Camera products