LIPSedge™ T225 / T235

3D Time-of-Flight (ToF) Camera

User's Manual

July 2026
Revision 1.0

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July 2026

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Revision History

Revision	Description	Date
1.0	New release	2026/1/15

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1. Package & Hardware Overview

1.1 Package Overview

A. Packing List

The packing list serves as a reference for package contents. If anything was missing, contact info@lips-hci.com.

No.	Item	Qty.
1.	LIPSedge™ T225 / T235 3D Time-of-Flight (ToF) Camera	1
2.	LIPSedge™ T225 / T235 3D Time-of-Flight (ToF) Camera Quick Start Guide	1
3.	USB 3.0 Type C-C cable	1

B. Camera Accessories

The following supplementary options facilitate the installation process but are NOT included in the package. You need to prepare these accessories on your own.

- Camera tripod: Secures the camera to a stable position.

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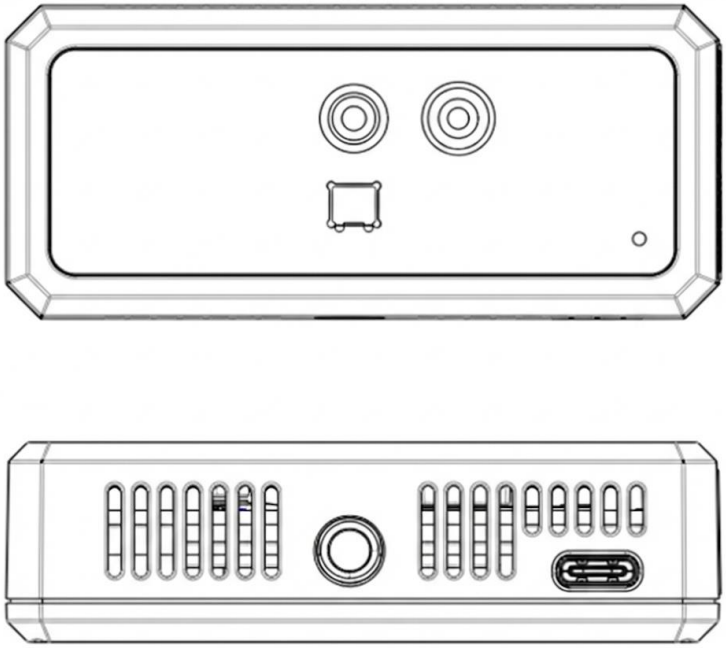
1.2 Hardware Overview

LIPSedge™ T225 3D ToF camera

The LIPSedge™ T225 3D ToF camera is a depth-sensing module utilizing indirect Time-of-Flight (iToF) technology to capture 640 x 480 resolution data at 30 frames per second. The system integrates a 940nm Vertical-Cavity Surface-Emitting Laser (VCSEL) and a global shutter depth sensor to provide a working range from 0.3m to over 5 m with Z-accuracy within 1%. It operates via a USB Type-C interface and maintains a form factor of 82 x 36 x 23 mm while consuming DC 5V3A power. The architecture prioritizes power efficiency, delivering full-resolution capture for raw image data at 30 fps for low-power operation.



Key Features

- 0.3-5+ meters detection range
- Sunlight Resistance: 80K Lux, operates in all lighting conditions (from darkness to daylight)

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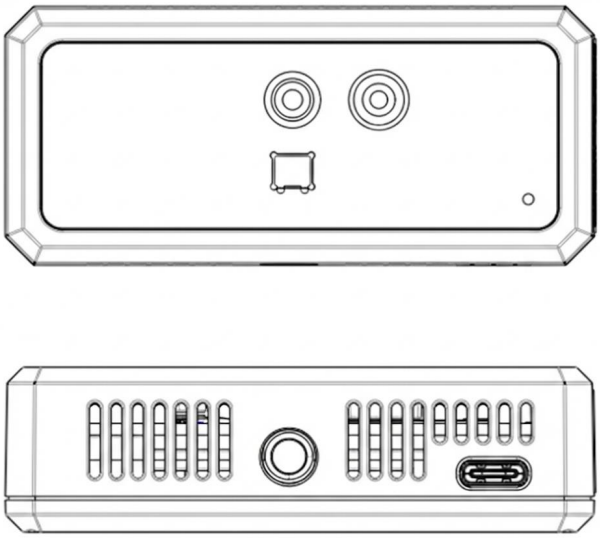
LIPSedge™ T235 3D ToF camera

The LIPSedge™ T235 3D ToF camera is a depth-sensing module utilizing indirect Time-of-Flight (iToF) technology to capture 640 x 480 resolution data at 30 frames per second. The system integrates a 940nm Vertical-Cavity Surface-Emitting Laser (VCSEL) and a global shutter depth sensor to provide a working range from 0.3m to over 5 m with Z-accuracy within 1%. It operates via a USB Type-C interface and maintains a form factor of 82 x 36 x 23 mm while consuming DC 5V3A power. The architecture prioritizes power efficiency, delivering full-resolution capture for raw image data at 30 fps for low-power operation.

The LIPSedge™ T235 supports RGB-D output, aligning color data with depth information to facilitate texture mapping and scene segmentation. This capability distinguishes the model from the depth-only LIPSedge™ T225, enabling implementation in facial authentication, gesture recognition, and volumetric scanning where visual context improves accuracy.



Key Features

- Integrate compute and neural network inference for low-latency and instant analytics capabilities.
- 0.3 – 5+ meters detection range
- Sunlight Resistance: 80K Lux , operates in all lighting conditions (from darkness to daylight)

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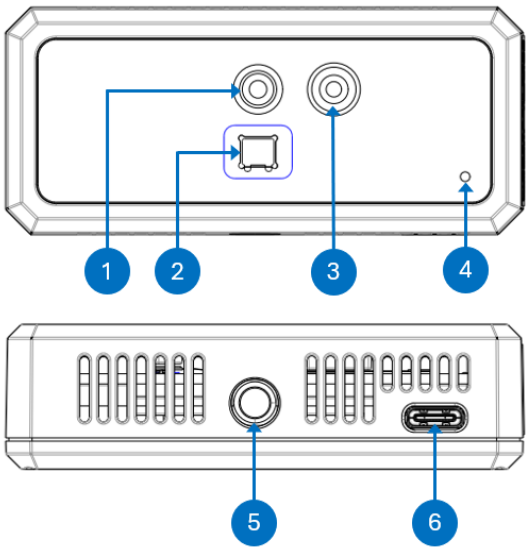
A. Hardware Features



No.	Name	Functions
1.	Depth Camera	Collect the depth data.
2.	NIR illuminator	Emits IR signals for depth value measurement
3.	RGB Camera	Captures RGB image data. **Note**: The RGB camera is available on LIPSedge™ T235 **ONLY.**
4.	Power indicator	Indicates the operational status of the device. – **Red**: Initialization failure / camera error – **Blue**: Normal operation – **Yellow**: Firmware update is needed – **Green**: Recovery mode
5.	Tripod Socket	Secures the camera to a tripod / camera stabilizer.
6.	USB 3.0 Interface	Connects to a USB 3.0 Type C to C cable.

Note:

- Do **NOT** obscure the aperture of the camera's optical components to ensure the optimal optical performance.
- The USB 3.0 Type-C to Type-C cable can be replaced with a USB 3.0 Type-A to Type-C cable. Ensure that the host's USB Type-A port can supply at least 5 V / 3A to power the camera and maintain proper operation.

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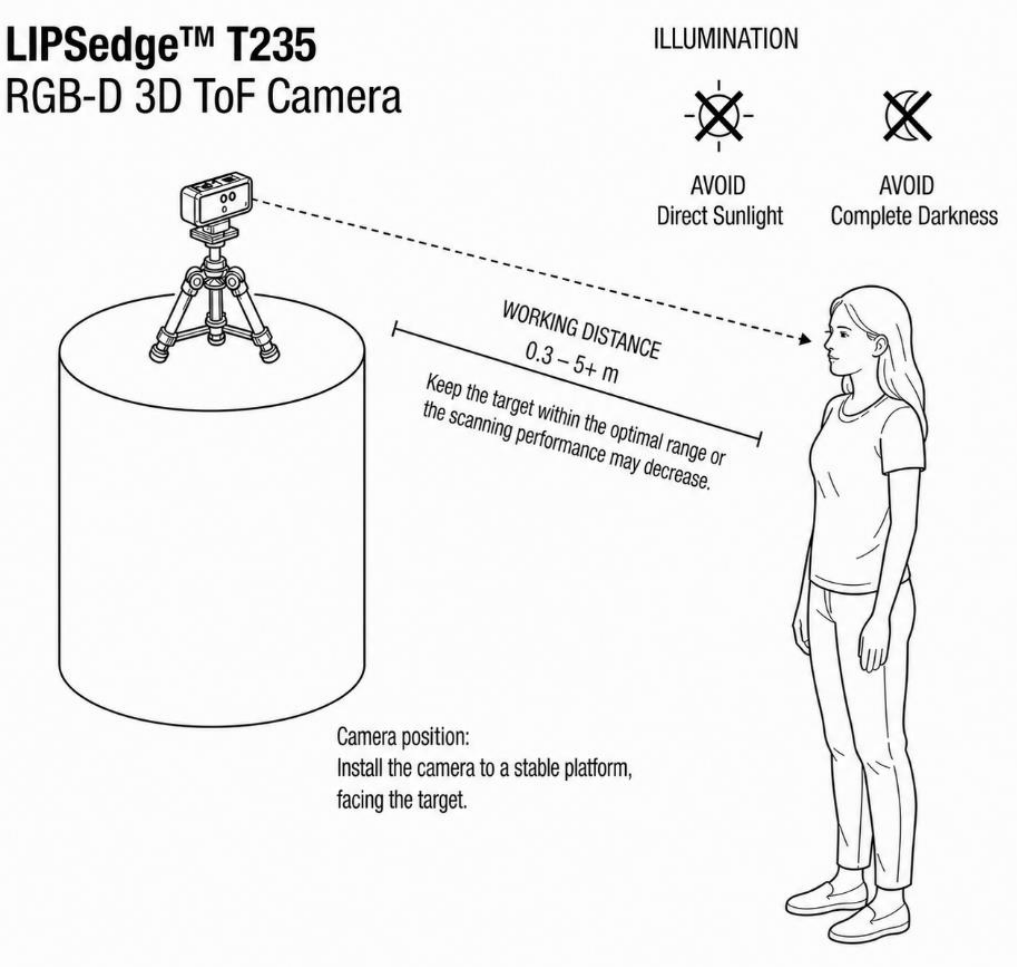
B. Hardware Installation



- **Camera working distance**: LIPSedge™ T225 / T235 3D ToF camera works best within the 0.3 -5 + m. Keep the target within the optimal range for optimal performance.
- **Camera position**: Install the camera to a stable platform, facing the target. Note that LIPS Corp. does **NOT** provide a tripod within the package, and you need to get your own tripod for hardware installation.
- **Illumination:** LIPSedge™ T225 and T235 support ambient illumination of up to 80K lux. Avoid installing the camera in **direct sunlight**, which may exceed the supported illumination range.

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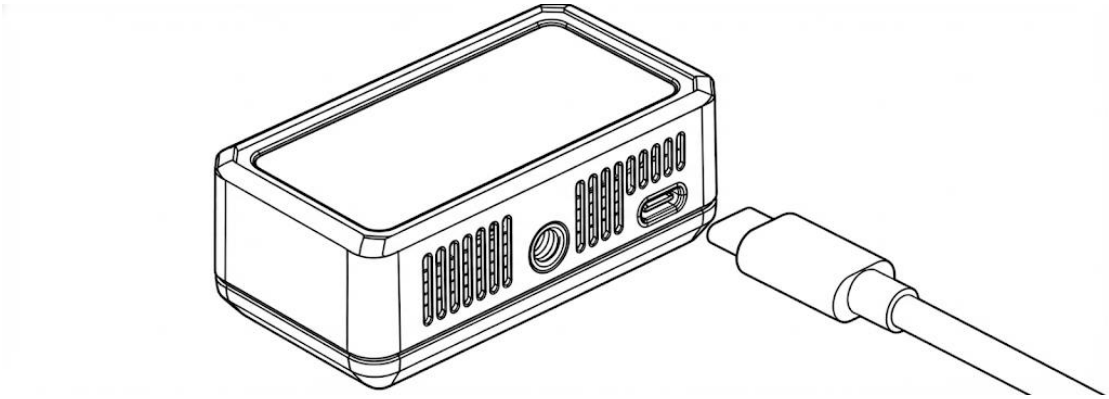
C. Camera Connection

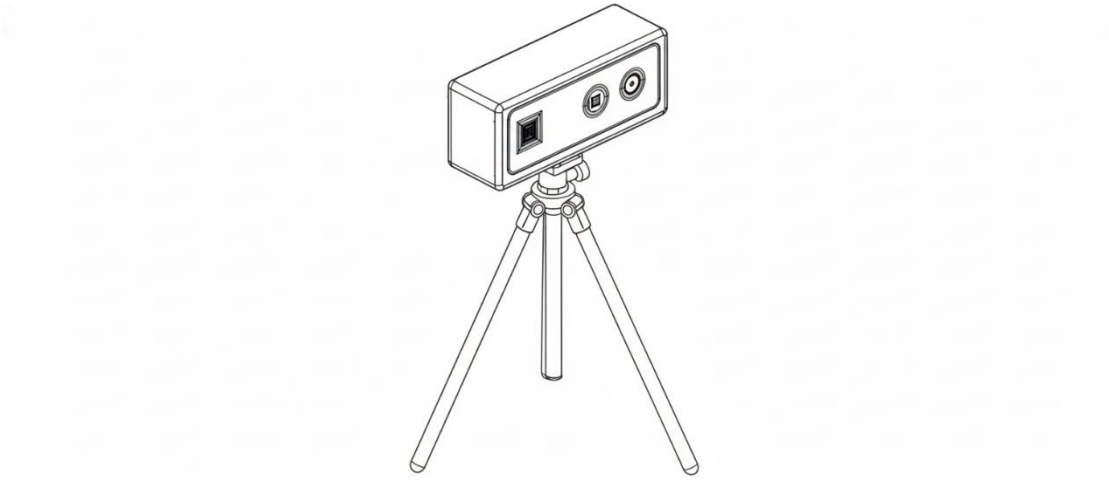
The LIPSedge™ T225 / T235 connects via a **USB Type-C** interface that handles both power delivery and data transmission.

1. Insert the **USB Type-C** into the camera's USB port (interoperable orientation allowed).

Normal view



Interoperable orientation view



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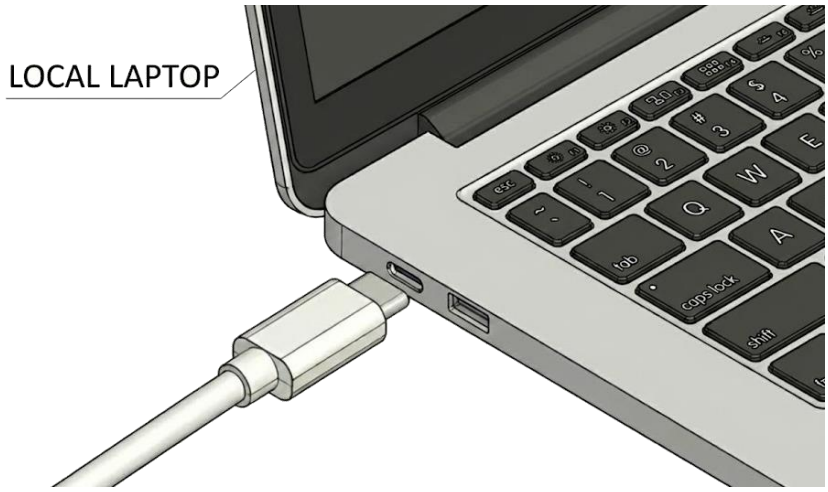
2. Connect the opposite end to a **USB 3.0** port on the host PC / laptop.



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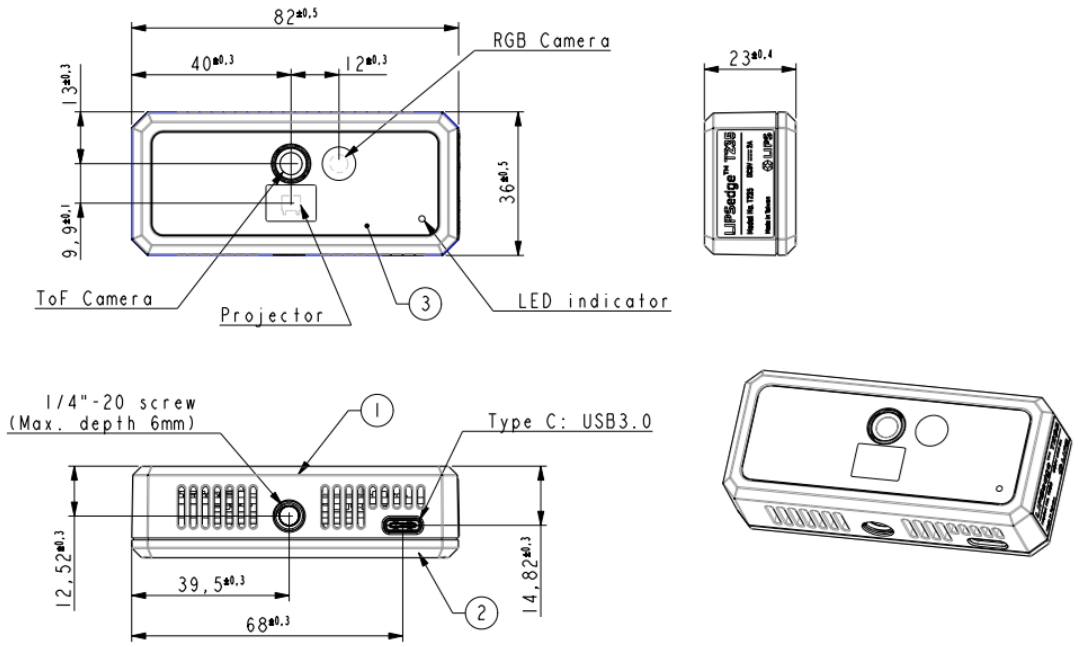
D. Hardware Dimensions

LIPSedge™ T225 / T235



Dimension	MIN	NOM	MAX	TOLERANCE	UNIT
X	81.5	82	82.5	±0.5	mm
Y	35.5	36	36.5	±0.5	mm
Z	22.6	23	23.4	±0.4	mm

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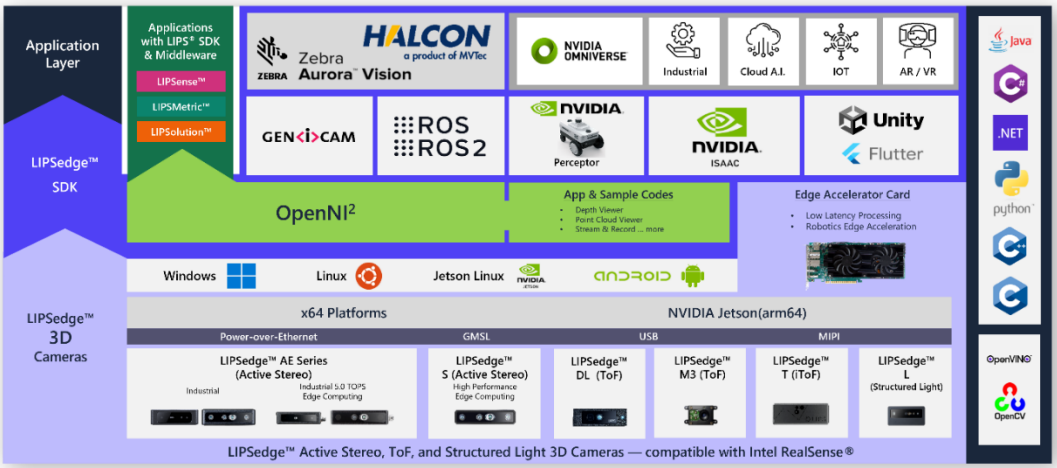
2. SDK Structure (Global by camera)

LIPS 3D camera / SDK offers a system for developing depth-sensing applications. As the LIPS system architecture illustrates, the system is comprised of the hardware layer and the software layer.

The hardware layer oversees data capture, transfer, and processes.

In the software layer, the captured data is fetched by the LIPS SDK (Software Development Kit) on the OS environment. Depending on the project complexity, wrappers and third-party utilities may be engaged before the data is eventually presented in the application layer for business applications.



The core of the system, the LIPS SDK, is comparable to a toolbox full of software modules comprised of middleware, libraries, wrappers and API, and miscellaneous programming languages / platforms for application development. With extensive wrapper support, LIPS SDK enables developers to access bottom layer data with APIs, thus eliminating the hassle of changing third-party functions. The result is a highly effective project scoping, monitoring, and execution workflow compatible with the fast-pacing AIoT market and machine

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vision demands.

3. SDK Installation (Global by camera)

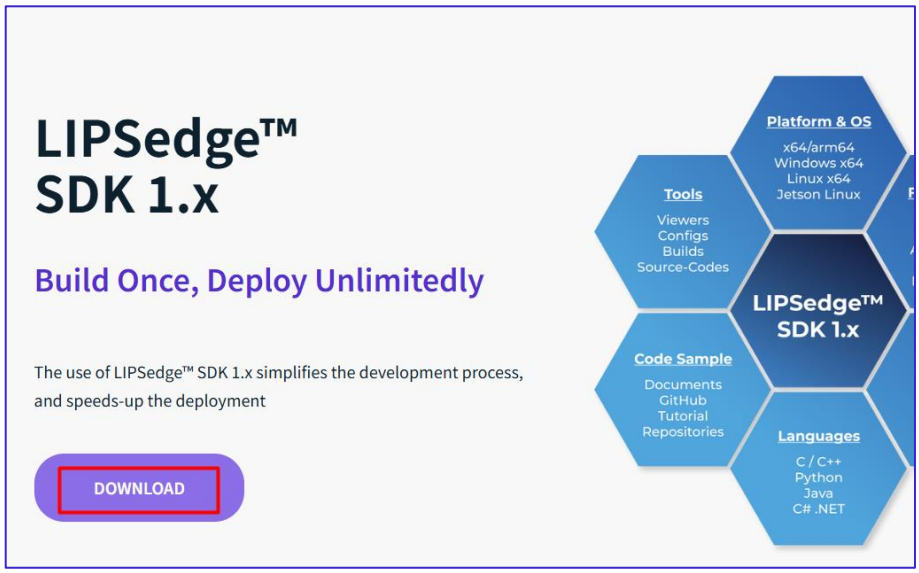
3.1 Platforms

A. Windows Installation (x64)

a. SDK Installation

To access the SDK, visit [3D Depth Camera SDK Free Download | LIPSedge™ SDK (lips-hci.com)](#) and procure the package for the preferred version, framework, and compatible operating system.

1. Visit LIPSedge™ SDK website and click Download.



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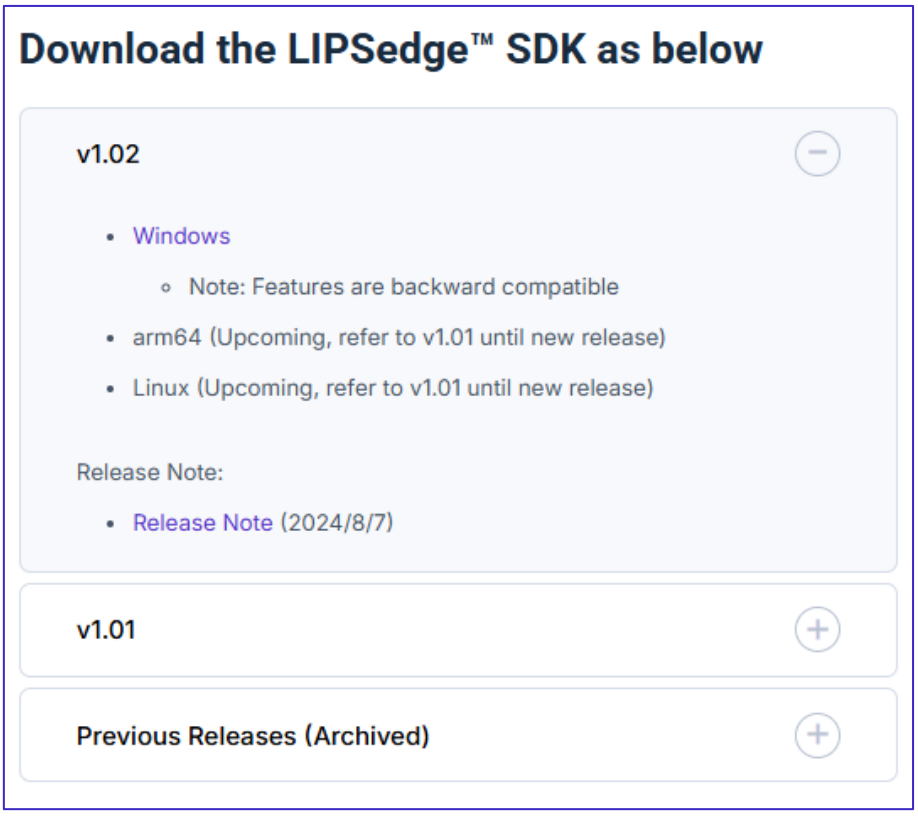
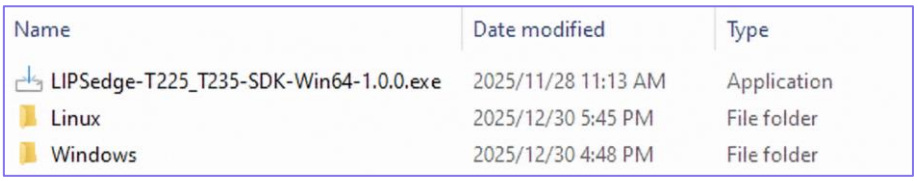
2. Select the SDK version compatoble to the local environment.



3. Extract and execute the downloaded file.



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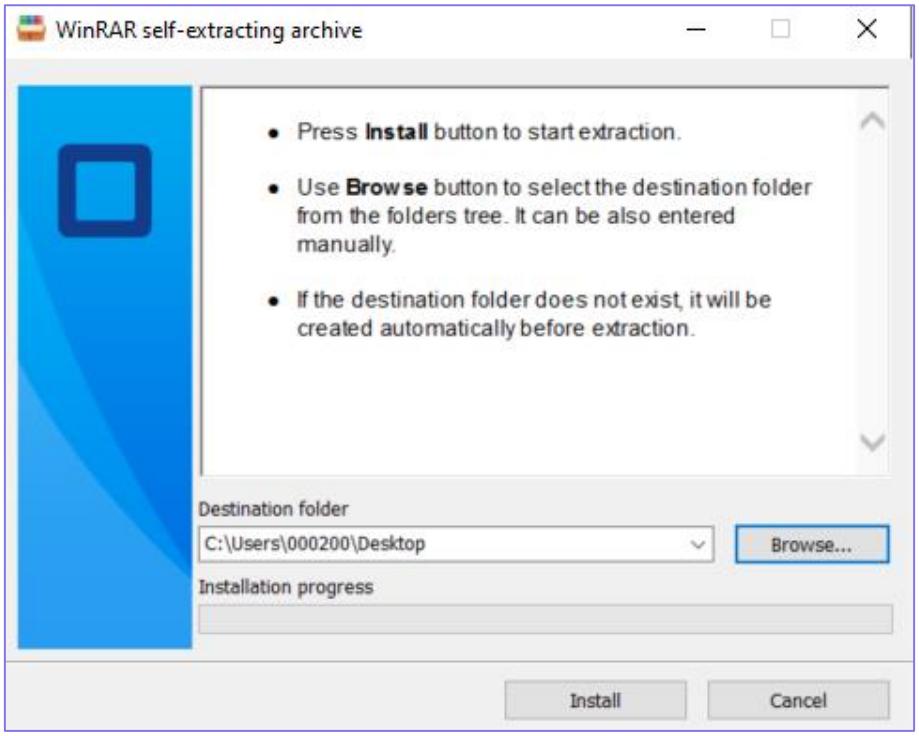
4. Accept the license agreement.

5. Select **the SDK installation location** and click **Install**.



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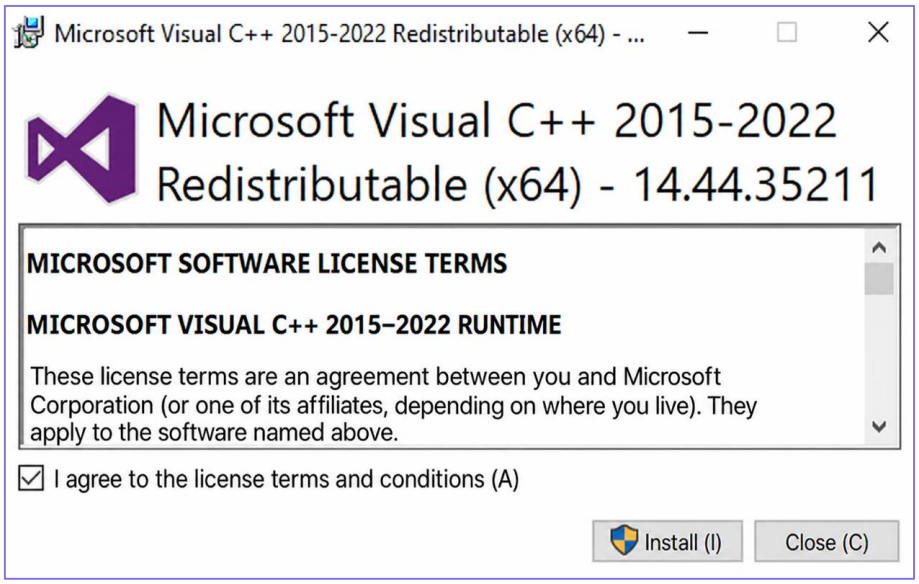
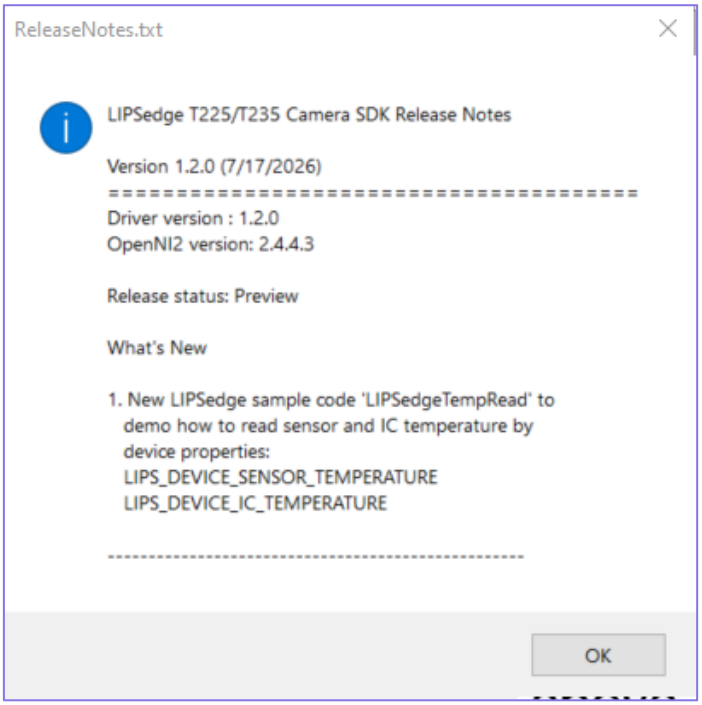
6. Install Microsoft Visual C++ Redistributable if needed.



7. Once the installation is complete, the setup wizard provides a summary of the latest features.



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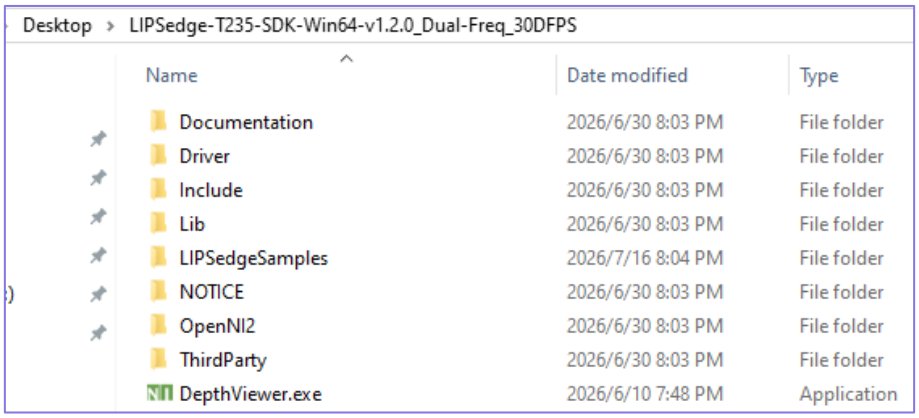
8. Once the installation is successful, the LIPSedge™ SDK and its relevant components are accessible at the location assigned.



9. The desktop folder contains:
   - **Documentation**: Contains essential OpenNI C++ API documentation.
   - **Driver**: Consists of the USB driver files for the LIPS camera.
   - **Include**: Contains essential OpenNI C++ headers. These headers can be checked along with the associated library files to facilitate development.
   - **Lib**: Contains the OpenNI libraries.
   - **LIPSedgeSamples**: Contains the source code of a series of executable tools.
   - **NOTICE**: Contains copyright and attribution notices relevant to the OpenNI components.
   - **OpenNI2**: Contains the essential software configuration of the SDK.
   - **Thirdparty**: Contains the essential software package for the compilers.
   - **DepthViewer.exe**: An image viewer for streaming RGB / depth images. Refer to *Chapter3.1-A-c Depth Viewer Settings*.
   - **EULA_LIPS_SDK.txt / html**: The end user agreement.
   - **glut64.dll**: Essential windows visualization library.
   - **LIPSCameraMatrx.exe**: Acquire camera intrinsic and extrinsic by OpenNI2 API.
   - **LIPSedgeTempRead.exe**: Acquire camera temperature.
   - **OpenNI.ini**: The OpenNI2 configuration file for runtime settings.
   - **OpenNI2.dll**: The main OpenNI2 runtime library for Windows.
   - **PointCloudViewer.exe**: Displays point cloud images.
   - **RawViewer.exe:** Displays lower-level camera data for application development.

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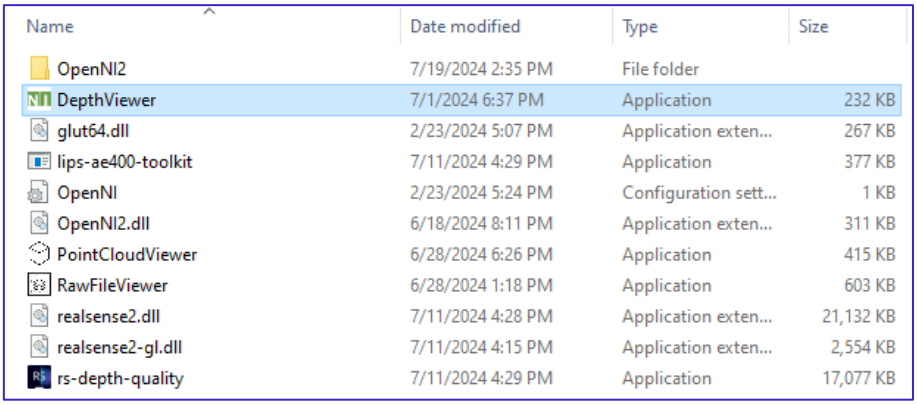
b. Camera Access

The LIPSedge™ T225 / T235 SDK (OpenNI-based) enables the LIPSedge™ T225 / T235 camera to stream live 3D, RGB, and point-cloud images efficiently. The SDK supports a single stream. To ensure a seamless visualization experience, follow the instructions for configuring the camera's IP settings before streaming.

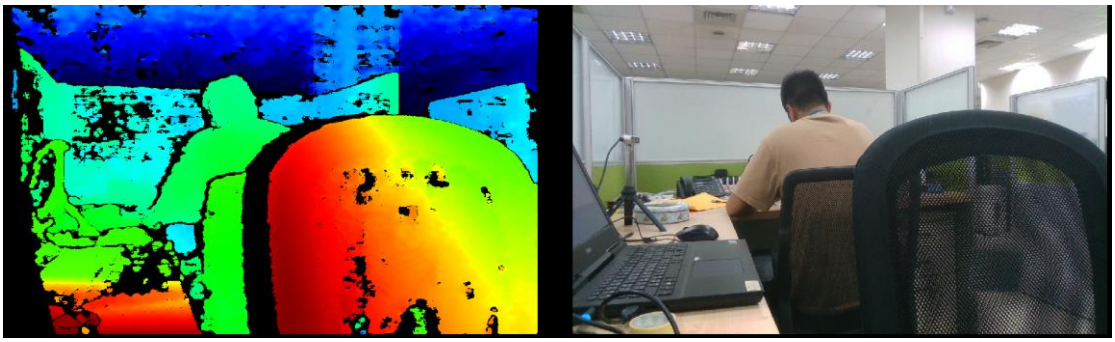
Follow the instructions below to access the camera image.

1. Go to **LIPSedge™ T225 / T235 SDK > OpenNI2 > Tools** and start **DepthViewer**.



Name	Date modified	Type	Size
OpenNI2	7/19/2024 2:35 PM	File folder	
DepthViewer	7/1/2024 6:37 PM	Application	232 KB
glut64.dll	2/23/2024 5:07 PM	Application exten...	267 KB
lips-ae400-toolkit	7/11/2024 4:29 PM	Application	377 KB
OpenNI	2/23/2024 5:24 PM	Configuration sett...	1 KB
OpenNI2.dll	6/18/2024 8:11 PM	Application exten...	311 KB
PointCloudViewer	6/28/2024 6:26 PM	Application	415 KB
RawFileViewer	6/28/2024 1:18 PM	Application	603 KB
realsense2.dll	7/11/2024 4:28 PM	Application exten...	21,132 KB
realsense2-gl.dll	7/11/2024 4:15 PM	Application exten...	2,554 KB
rs-depth-quality	7/11/2024 4:29 PM	Application	17,077 KB

2. DepthViewer will display 3D / RGB images once the camera is properly connected.



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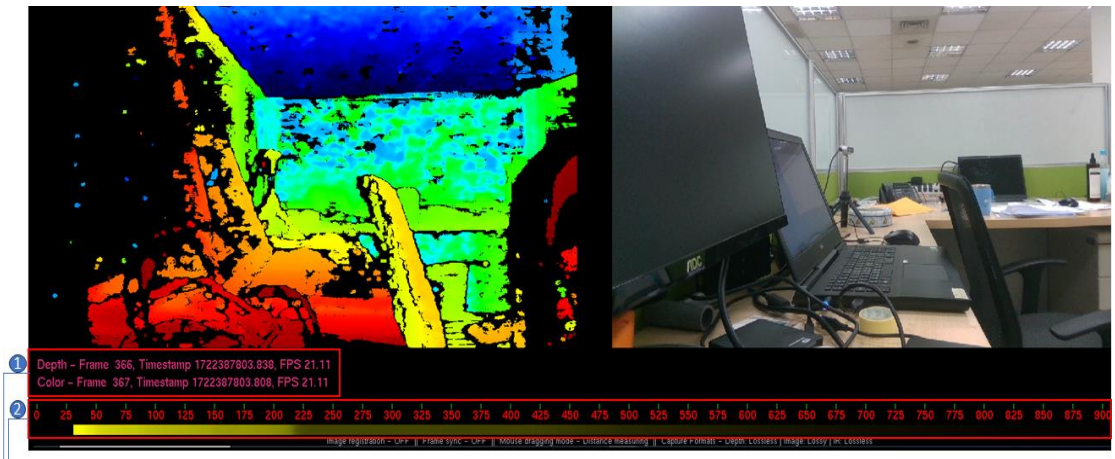
3. Press **[p]** to activate **the pointer mode**. The meter below shows the depth data of the given point marked by the indicator.

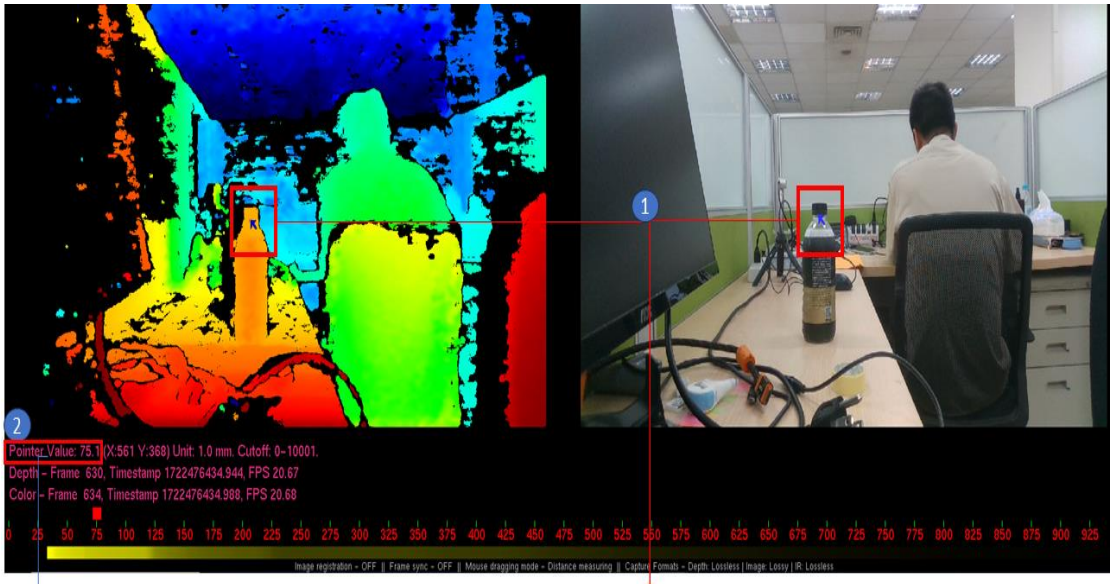


Information includes Depth & RGB: Frame/ TimeStamp/ FPS

The scale means distance: Size is from 0 to 950mm
- The yellow bar represents the distance range from all objects in the depth viewer.
- The deep yellow bar represents the distance that includes many objects.
- The slight yellow bar represents the distance that includes fewer objects.

Example:
The above scene shows the object's distance from 25mm to 575mm, which 25mm to 225mm include many objects, from 225 to 575mm shows fewer objects.

4. Developers can get the depth value by Moving the blue cursor to the object.



Move the blue cursor to the object; Users can get the distance from the pointer value.

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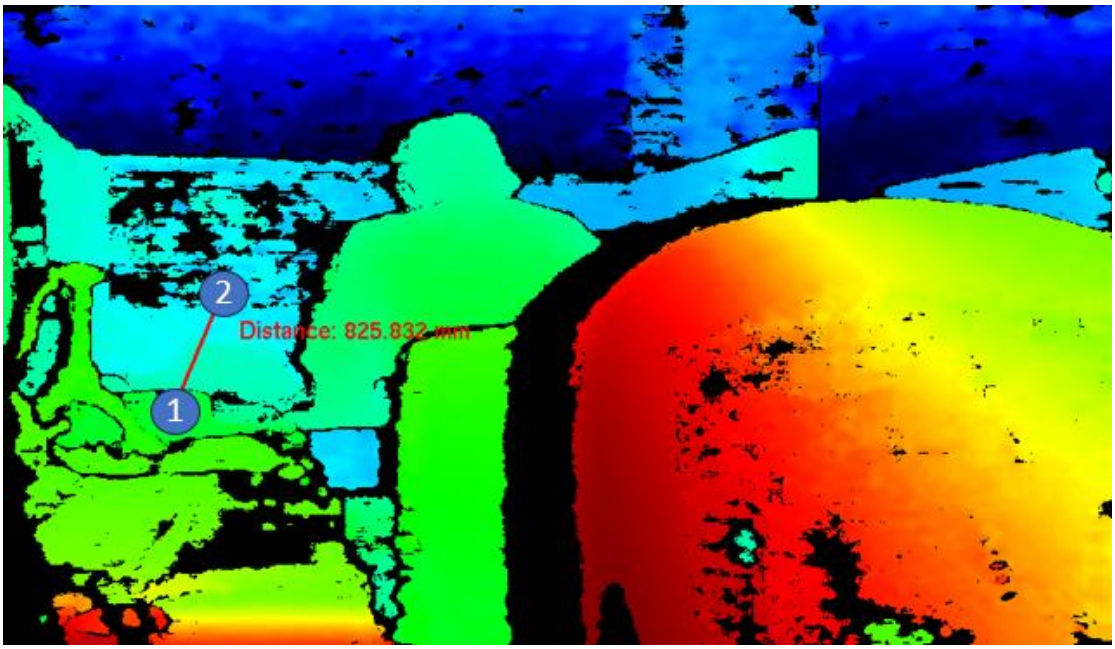
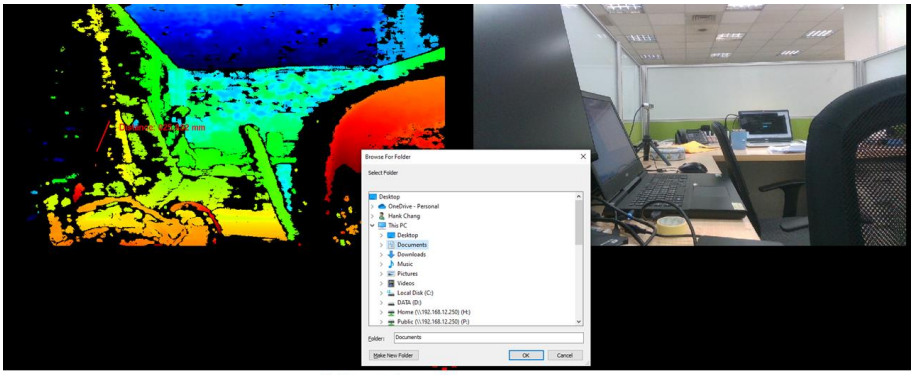
5. To measure the distance between 2 points, drag mouse cursor from point 1 to point 2, as below. The distance line disappears when points move to the black area.



6. Optionally press F to maximize/minimize the viewer's window.

7. Press C to capture the current screen as a raw file. To access the raw file, go to **LIPSedge™ T225 / T235 SDK > OpenNI2 > Tools** and drag the captured image file to the RawFileViewer.exe. For details, refer to *Chapter 5 5.1-E. RawfileViewer*.



Press "c." A window will pop up,
and users can choose any folder with authority to save the depth/RGB raw data.

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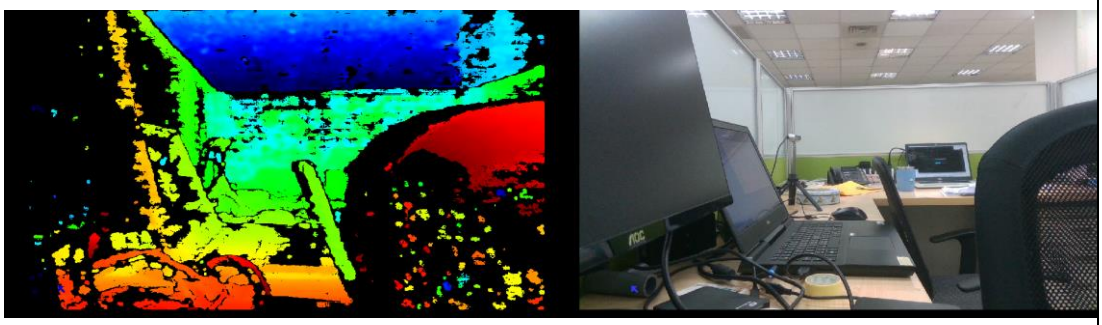
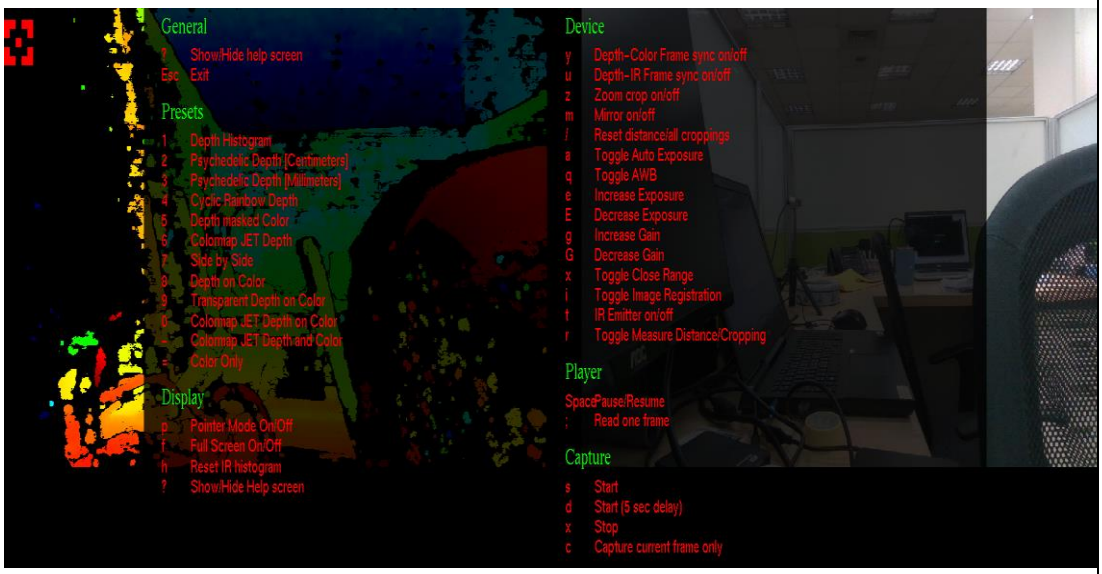
c. Depth Viewer Settings

Depth Viewer relies on hotkeys, listed in the help menu, to control its functionality and adjustments. By default, the menu in Depth Viewer is hidden to provide an unobstructed viewing experience. To access this menu, press Shift + ?.

Default – The help menu hidden



The help menu displayed



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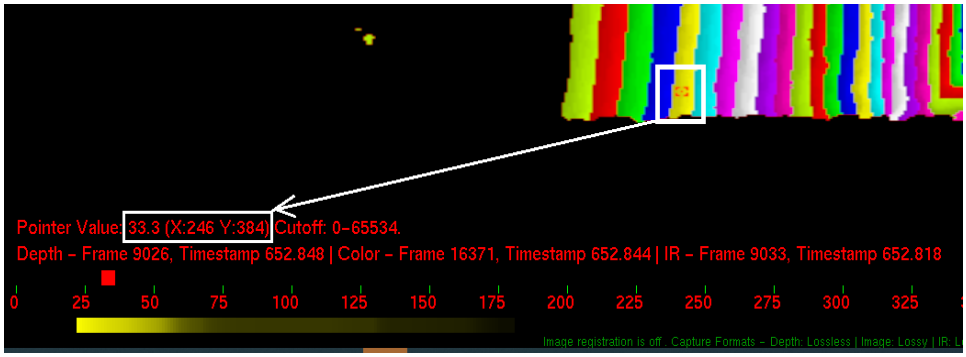
The help menu provides the following functionalities:

General

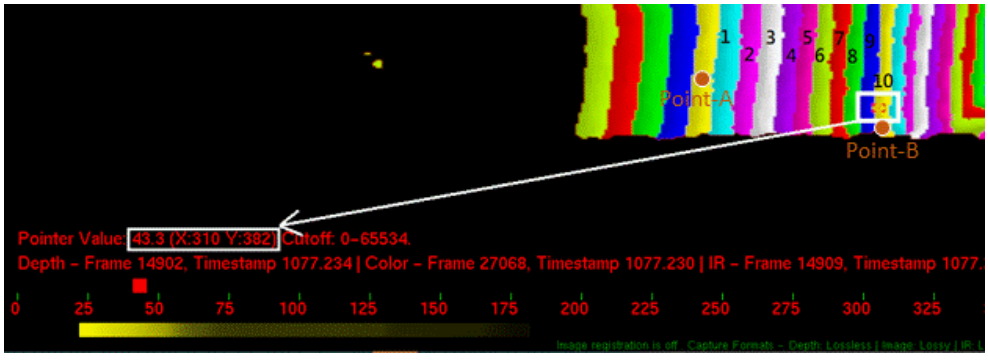
- **Show / Hide Help Screen [Shift + ?]**: Shows the **Help Screen** which contains the description of keyboard shortcuts with their functions.
- **Esc**: Exits DepthViewer.+

Preset

- **Presets**: Displays the depth/color images in 11 styles. Press the hotkey mentioned by the screen hint to select the image styles. By default, depth/color images are displayed **Side By Side**. In this example, LIPS Corp. demonstrates a way to assess the depth image quality using the psychedelic depth style with the pointer mode [p].
- **Psychedelic depth [3]**: Visualizes the depth images in a psychedelic style, aiding in the evaluation of image capturing presentation and quality.
  The value below, 33.3, represents the depth value from the camera lens to the object. (The unit is mm. X&Y represent ordinate.)



There will be 9 intervals from one color area to the same one color area; each interval means 1mm unit. This means the depth value will increase by 10mm from one color area to the same color. For example, the depth value will become 43.3 from Point A to Point B.



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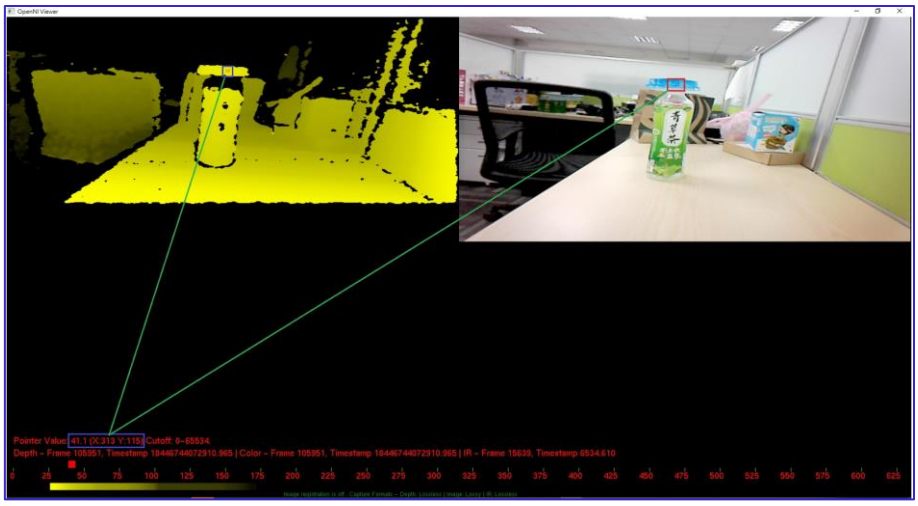
Display

- **Pointer Mode On / Off [p]**: This enables **Pointer Mode** to show a red dot, which indicates the depth value (unit: mm), representing the distance from the camera lens to the object located at a specific point on the image.



- **Full Screen On / Off [f]:** This option displays the camera images in full screen or turns off the full-screen display.
- **Reset IR histogram [h]:** Clears the IR histogram.
- **Show/hide help screen [?]:** The Help Screen contains a description of keyboard shortcuts and their functions.

Device

- **Reset all croppings [/]**: Reset the cropping area previously assigned.
- **Toggle Image Registration [i]**: Activates or deactivates image registration.

Player

- **Pause / Resume [Space]:** Pauses the playback of the recording or resumes playback.
- **Read one Frame [;]**: This function appears only when the playback is paused. Click to load the playback image of the next frame.

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Capture

- **Start [s]:** Assign a path to save the recording files and start recording images.
- **Start (5 sec delay) [d]**: Recording images 5 seconds upon clicking this function.
- **Stop [x]**: Stops recording camera image.
- **Capture current frame only [c]:** Saves the current frame as an image file.

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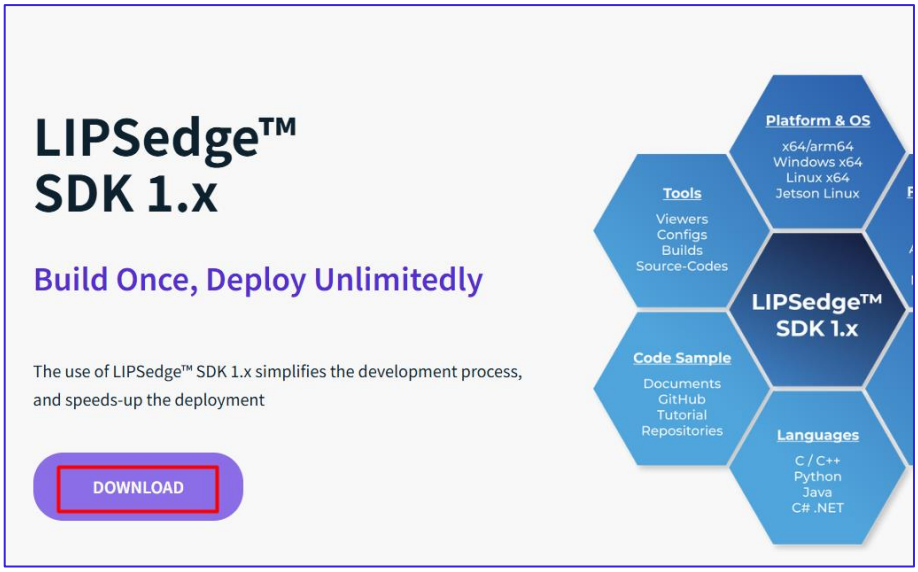
B. Linux / NVIDIA Jetson Installation

a. SDK Installation

To access the SDK, visit https://www.lips-hci.com/3d-camera and procure the package for the preferred version, framework, and compatible operating system.

1. Visit LIPSedge™ SDK website and click Download.



2. Select the SDK version compatoble to the local environment.

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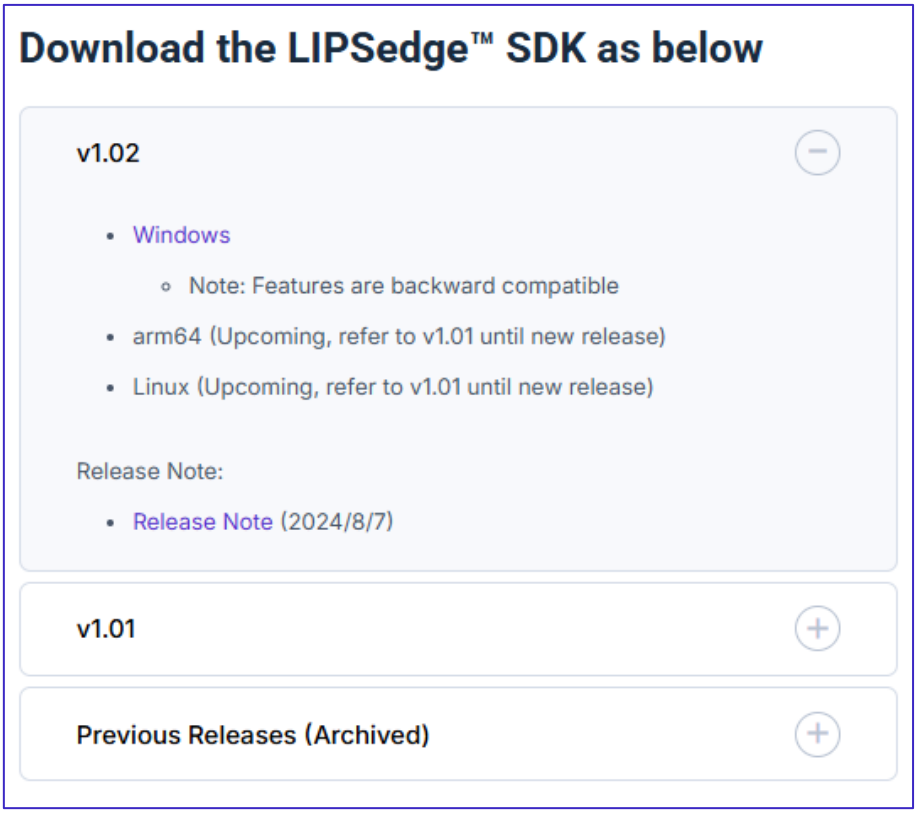
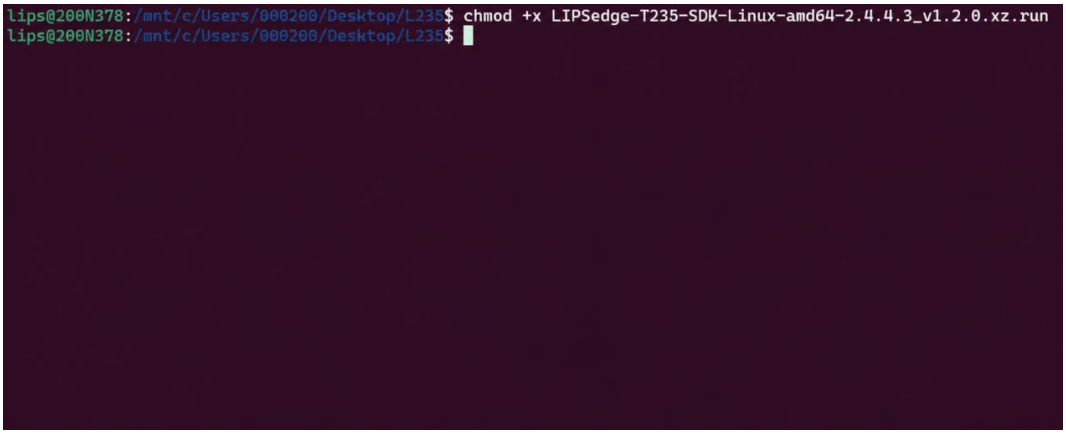


3. Start terminal an
4. d go to the installation file's location. In this example, /home is used.

5. Extract the downloaded file and change its **access permission**.

```
chmod +x LIPSedge-Camera-SDK-<version>.run
```



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6. Execute the installation file.

```
./LIPSedge-Camera-SDK-<version>.run
```

```
lips@200N378:/mnt/c/Users/000200/Desktop/T235$ sudo ./LIPSedge-T235-SDK-Linux-amd64-2.4.4.3_v1.2.0.xz.run
[sudo] password for lips:
End-User License Agreement("EULA")
==================================

Last updated: (2017/10/26)

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is enclosed with this End User License Agreement (this "EULA"), please
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all terms and conditions of this EULA. If User does not accept this
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Nothing contained herein shall transfer or be deemed to transfer to
User any title, interest or intellectual property rights relating to
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```

7. Accept the license agreement.

```
Section 10. Governing Laws and Jurisdiction
-------------------------------------------
This EULA shall be interpreted and construed under the laws of Taiwan
(R.O.C) without regard to provisions concerning conflicts of law. The
parties hereby submit to jurisdiction of and agree that any legal
proceeding with respect to or arising under this MOU shall be brought
solely in Taiwan Shihlin District Court as court of first stance.

Section 11 General Provisions
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    a.  The failure of a party to enforce any provision hereof shall
        not constitute a waiver of such provision or the right of such
        party to enforce such provision or any other provision.
    b.  This is the entire agreement between LIPS and User relating to
        the Software and it supersedes any prior or contemporaneous
        representations, discussions, undertakings, communications or
        advertising relating to the Software.
Please type y to accept, n otherwise: y
```


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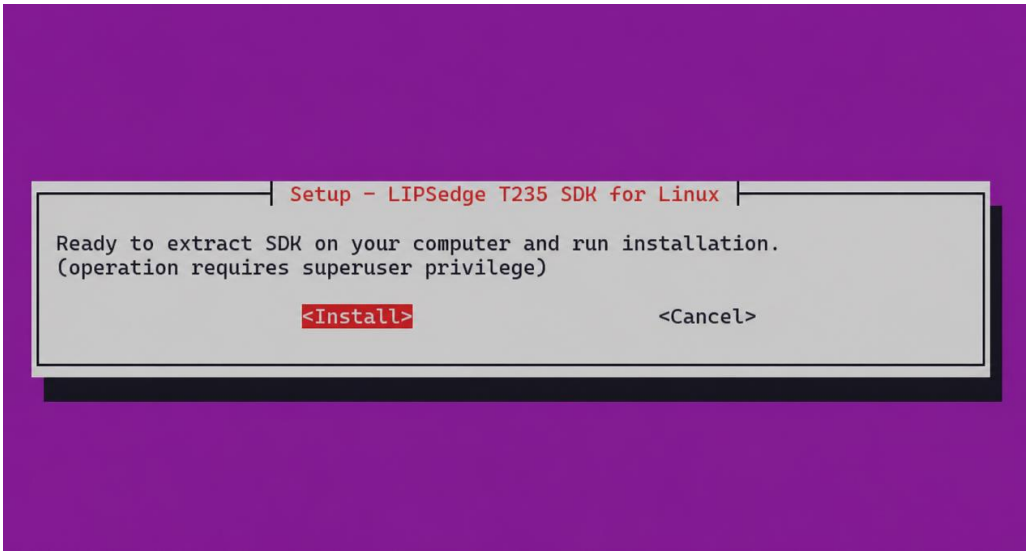
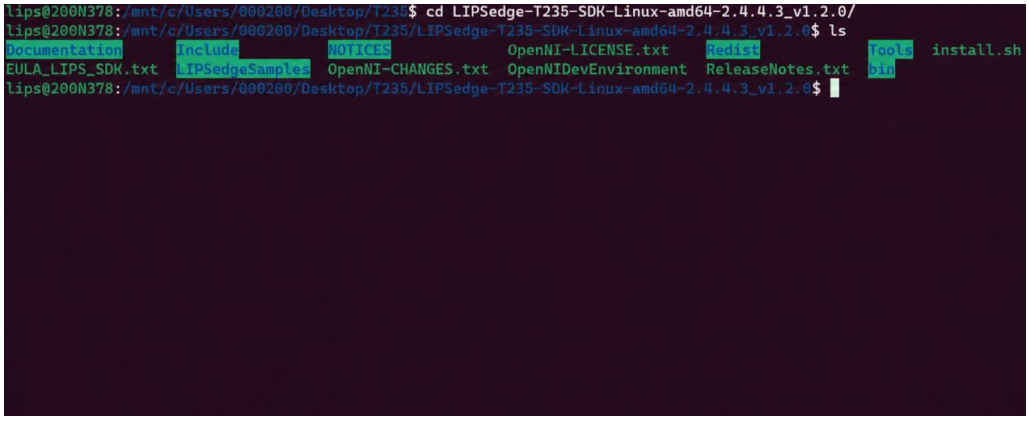
8. Select Install.



9. Once the installation is successful, the LIPSedge™ SDK and its relevant components is accessible at the **installation location**. For the folder content, refer to similar content in *3.2-A-a. OpenNI2*.



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b. Camera Access

LIPSedge™ T225 / T235 utilizes Depth Viewer for examining and assessing the quality of depth, RGB, and point cloud image.

Before proceeding further, install the necessary dependencies:

1. Conduct a repository update.

```
sudo apt update && sudo apt upgrade -y
```

```
lips@lips-Inspiron-7570:~$ sudo apt update && sudo apt upgrade -y
[sudo] password for lips:
Ign:1 http://tw.archive.ubuntu.com/ubuntu jammy InRelease
Ign:2 http://security.ubuntu.com/ubuntu jammy-security InRelease
Ign:3 http://tw.archive.ubuntu.com/ubuntu jammy-updates InRelease
Ign:4 http://tw.archive.ubuntu.com/ubuntu jammy-backports InRelease
Ign:2 http://security.ubuntu.com/ubuntu jammy-security InRelease
Ign:1 http://tw.archive.ubuntu.com/ubuntu jammy InRelease
Ign:3 http://tw.archive.ubuntu.com/ubuntu jammy-updates InRelease
Ign:4 http://tw.archive.ubuntu.com/ubuntu jammy-backports InRelease
Ign:1 http://tw.archive.ubuntu.com/ubuntu jammy InRelease
Ign:2 http://security.ubuntu.com/ubuntu jammy-security InRelease
Ign:3 http://tw.archive.ubuntu.com/ubuntu jammy-updates InRelease
Ign:4 http://tw.archive.ubuntu.com/ubuntu jammy-backports InRelease
Err:1 http://tw.archive.ubuntu.com/ubuntu jammy InRelease
  Temporary failure resolving 'tw.archive.ubuntu.com'
Err:2 http://security.ubuntu.com/ubuntu jammy-security InRelease
  Temporary failure resolving 'security.ubuntu.com'
Err:3 http://tw.archive.ubuntu.com/ubuntu jammy-updates InRelease
  Temporary failure resolving 'tw.archive.ubuntu.com'
Err:4 http://tw.archive.ubuntu.com/ubuntu jammy-backports InRelease
  Temporary failure resolving 'tw.archive.ubuntu.com'
Reading package lists... Done
```

2. Install the OpenNI and relevant dependencies

```
sudo apt install build-essential cmake pkg-config libusb-1.0-0-dev
libudev-dev freeglut3-dev libopenni2-dev curl git -y
```

```
lips@lips-Inspiron-7570:~$ sudo apt install build-essential cmake pkg-config lib
usb-1.0-0-dev libudev-dev freeglut3-dev libopenni2-dev curl git -y
[sudo] password for lips:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu cmake-data dh-elpa-helper
  dpkg-dev fakeroot freeglut3 g++ g++-11 gcc gcc-11 git-man
  libalgorithm-diff-perl libalgorithm-diff-xs-perl libalgorithm-merge-perl
  libasan6 libbinutils libc-dev-bin libc-devtools libc6-dev libcc1-0
  libcrypt-dev libctf-nobfd0 libctf0 libdpkg-perl libegl-dev liberror-perl
  libfakeroot libfile-fcntllock-perl libgcc-11-dev libgl-dev libgl1-mesa-dev
  libgles-dev libgles1 libglu1-mesa-dev libglvnd-core-dev libglvnd-dev
  libglx-dev libice-dev libitm1 libjsoncpp25 liblsan0 libnsl-dev libopengl-dev
  libopenni2-0 libpthread-stubs0-dev libquadmath0 librhash0 libsm-dev
  libstdc++-11-dev libtirpc-dev libtsan0 libubsan1 libusb-1.0-doc libx11-dev
  libxau-dev libxcb1-dev libxdmcp-dev libxext-dev libxt-dev linux-libc-dev
  lto-disabled-list make manpages-dev rpcsvc-proto x11proto-dev
  xorg-sgml-doctools xtrans-dev
Suggested packages:
  binutils-doc cmake-doc ninja-build cmake-format debian-keyring g++-multilib
```


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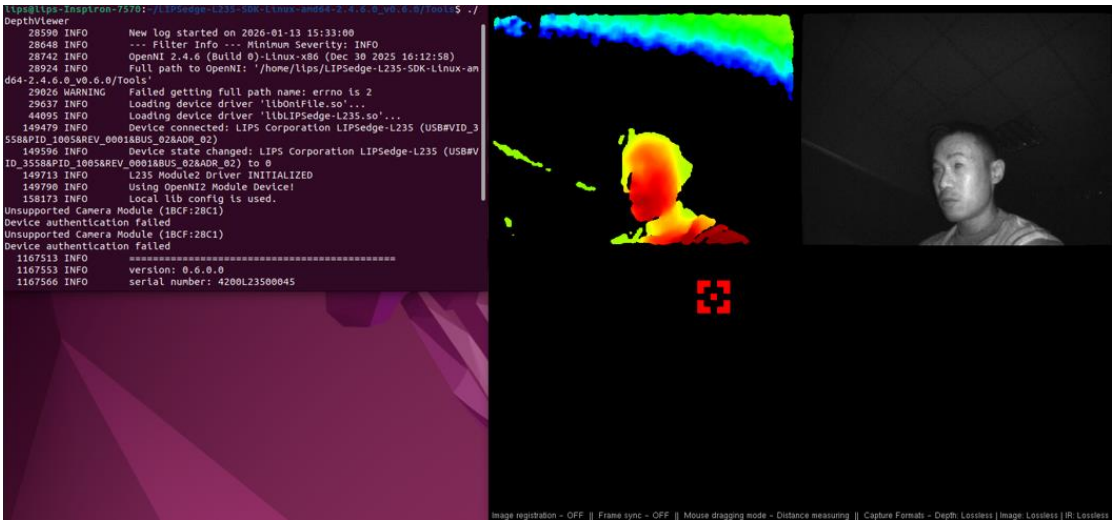
[Camera Access]

3. In the Terminal, go to LIPSedge SDK > Tools and start the DepthViewer.

```
cd LIPSedge-SDK/Tools
./DepthViewer
```

```
lips@lips-Inspiron-7570:~$ cd LIPSedge-T235-SDK-Linux-amd64-2.4.4.3_v1.2.0/Tools
lips@lips-Inspiron-7570:~/LIPSedge-T235-SDK-Linux-amd64-2.4.4.3_v1.2.0/Tools$ ./
DepthViewer
    28590 INFO       New log started on 2026-01-13 15:33:00
    28648 INFO       --- Filter Info --- Minimum Severity: INFO
    28742 INFO       OpenNI 2.4.6 (Build 0)-Linux-x86 (Dec 30 2025 16:12:58)
    28924 INFO       Full path to OpenNI: '/home/lips/LIPSedge-T235-SDK-Linux-am
d64-2.4.4.3_v1.2.0/Tools'
    29026 WARNING    Failed getting full path name: errno is 2
    29637 INFO       Loading device driver 'libOniFile.so'...
    44095 INFO       Loading device driver 'libLIPSedge-T235.so'...
   149479 INFO       Device connected: LIPS Corporation LIPSedge-T235 (USB#VID_3
558&PID_1005&REV_0001&BUS_02&ADR_02)
   149596 INFO       Device state changed: LIPS Corporation LIPSedge-T235 (USB#V
ID_3558&PID_1005&REV_0001&BUS_02&ADR_02) to 0
   149713 INFO       T235 Module2 Driver INITIALIZED
   149790 INFO       Using OpenNI2 Module Device!
   158173 INFO       Local lib config is used.
Unsupported Camera Module (1BCF:28C1)
Device authentication failed
Unsupported Camera Module (1BCF:28C1)
```

4. Upon activation, a **Status Window**, and a **Viewer Window** both pop



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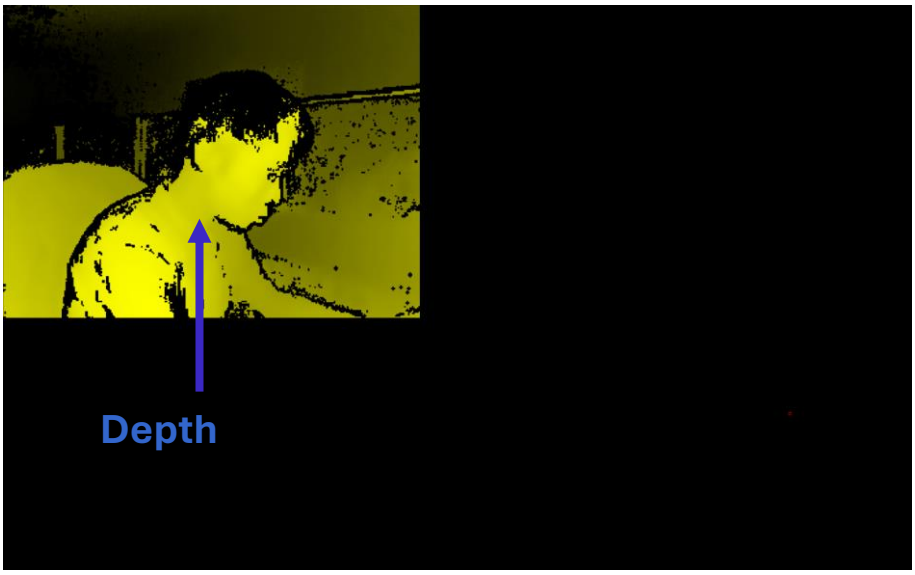
5. The **Status Window** displays the camera information, such as SDK build version, SDK time stamp, camera ID, status.

6. The **Viewer Window** displays the Depth image on screen.



7. Press **[p]** to activate **the pointer mode**. The meter below shows the depth data of the given point marked by the indicator.

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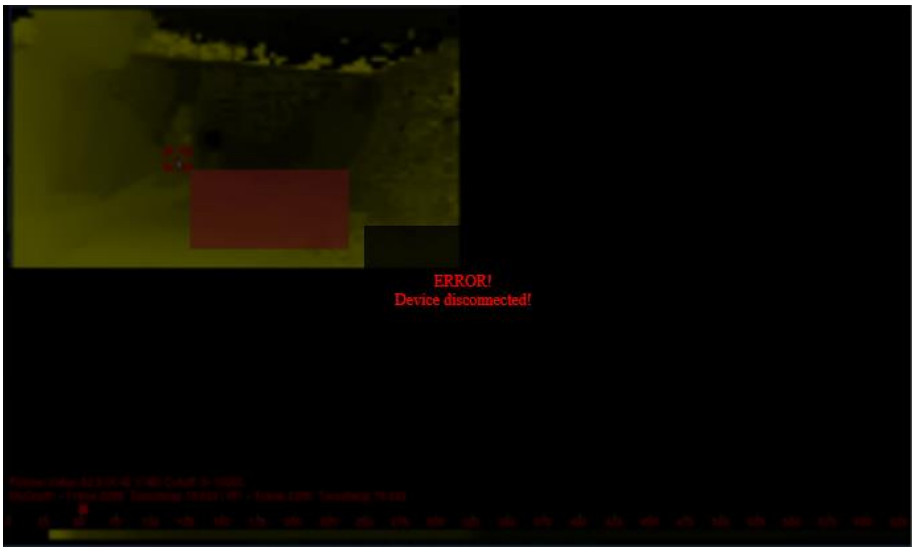
8. Optionally choose an area to display by dragging a cropping area with the cursor. The rest of the areas will be masked from displaying.

9. Optionally press F to maximize / minimize the viewer's window.

Note: If for any reason the USB cable is forcibly removed while Depth Viewer is functioning, an **ERROR! Device disconnected** message appears on the screen. To resume livestreaming, re-plug the USB cable.



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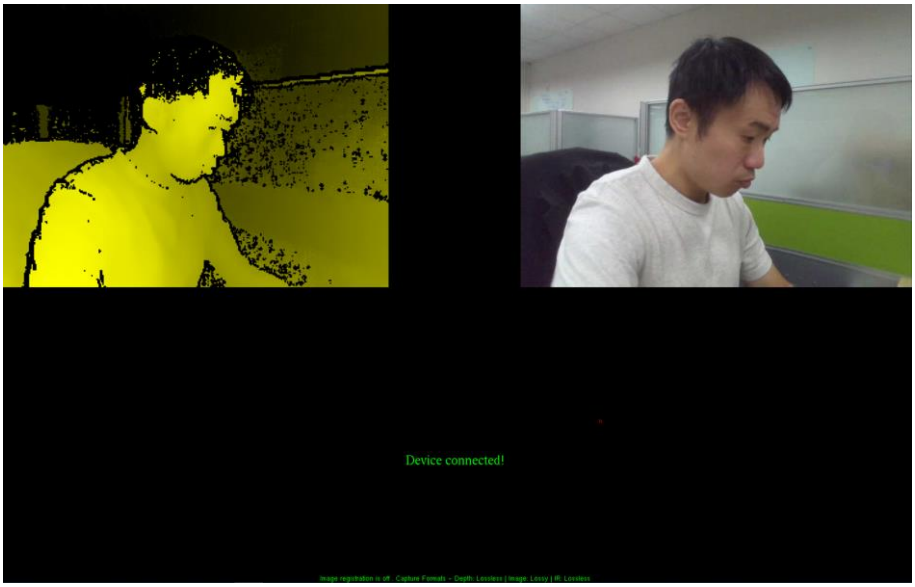
10. Optionally press C to capture the current screen as a raw format file. To access the raw format file, go to **LIPSedge™ T225 / T235 SDK > OpenNI2 > Tools > CaptureFrames** and drag the captured image file to the **Ni2RawViewer.exe**. For details, refer to *5.1 Sample codes*.

11. If by accident the camera is abruptly connected, the camera will automatically restore the camera connection.



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c. Depth Viewer Settings

Depth Viewer relies on hotkeys, which are listed in the help menu, to control its functionality and adjustments. The hotkey functions for the Depth Viewer of Linux version are identical to its Windows counterpart. Refer to *3.1-A-c. Depth Viewer Settings* for details.

C. Other OS (by request)

Other OS support by request.

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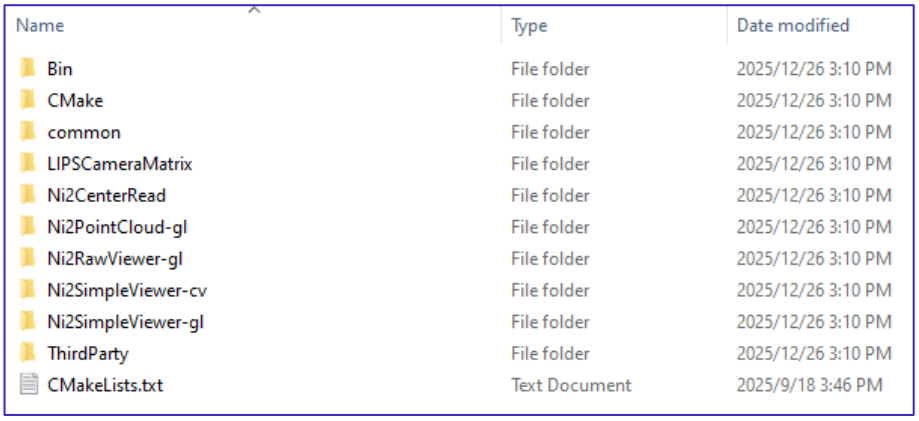
3.2 SDK Knowledge Base

The LIPSedge™ T225 / T235 SDK provides a comprehensive set of files and folders designed to facilitate seamless camera integration and system development. These core resources include essential header files and specialized libraries required for successful code compilation across different environments.

A. Windows Setup

a. LIPSedgeSamples

LIPSedgeSamples folder contains the necessary components to establish hardware compatibility and ensure a stable development environment.



Name	Type	Date modified
Bin	File folder	2025/12/26 3:10 PM
CMake	File folder	2025/12/26 3:10 PM
common	File folder	2025/12/26 3:10 PM
LIPSCameraMatrix	File folder	2025/12/26 3:10 PM
Ni2CenterRead	File folder	2025/12/26 3:10 PM
Ni2PointCloud-gl	File folder	2025/12/26 3:10 PM
Ni2RawViewer-gl	File folder	2025/12/26 3:10 PM
Ni2SimpleViewer-cv	File folder	2025/12/26 3:10 PM
Ni2SimpleViewer-gl	File folder	2025/12/26 3:10 PM
ThirdParty	File folder	2025/12/26 3:10 PM
CMakeLists.txt	Text Document	2025/9/18 3:46 PM

- **Bin**: Contains executable binary files and essential system dynamic-link libraries required to run applications.
- **CMake**: Holds configuration files and scripts used by the CMake build system to manage the compilation process across different platforms.
- **common**: Stores shared source code, header files, and utility functions utilized by multiple sample applications and components.
- **LIPS / Ni2 samples**: Contains a series of executable tools and the source code of these tools.
- **ThirdParty**: Includes external libraries, dependencies, and open-source components required by the SDK for extended functionality.

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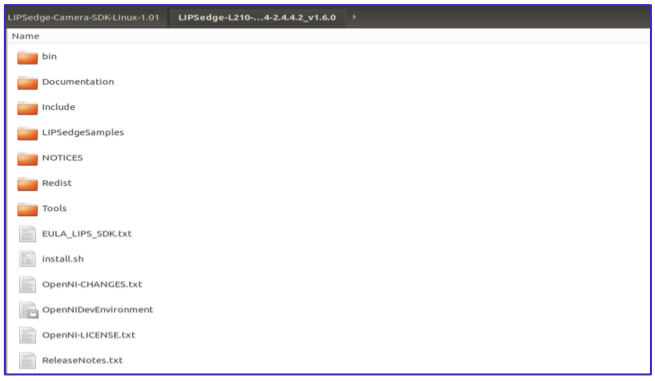
b. Linux Setup

In LIPSedge™ T225 / T235 SDK (OpenNI based) for the Linux system, the folders are structured in a way that the OpenNI2 and dependency files are **adjacent to the application that requires these external resources**. Go to **./home/LIPSedge-Camera-SDK-Linux/LIPSedge[Model]-SDK** for OpenNI C++ API documentation, header files, libraries for compilation, sample applications, system files, and important information such as licenses and release notes.



- **bin**: Consists of the USB driver files for the LIPS camera.
- **Documentation**: Contains essential OpenNI C++ API documentation.
- **Include**: Contains essential OpenNI C++ headers. These headers can be checked along with the associated library files to facilitate development.
- **LIPSedgeSamples**: Contains the source code of these tools.
- **NOTICE**: Contains copyright and attribution notices relevant to the OpenNI components.
- **Redist**: Contains network configuration files, camera drivers and system files necessary for image streaming.
- **Tools**: Holds captured frames from example programs and other camera configuration files.
- **EULA_LIPS_SDK.txt**: The end user agreement.
- **Install.sh**: In cases where the Linux / Ubuntu SDK installation was aborted, execute install.sh to install the SDK.
- **OpenNI-CHANGES.txt**: The change log for OpenNI.
- **OpenNIDevEnvironment**:The environment variables related to OpenNI.
- **OpenNI-LICENSE.txt**: Contains information about the licensing terms for OpenNI.
- **ReleaseNotes**: The latest system requirements for OpenNI.

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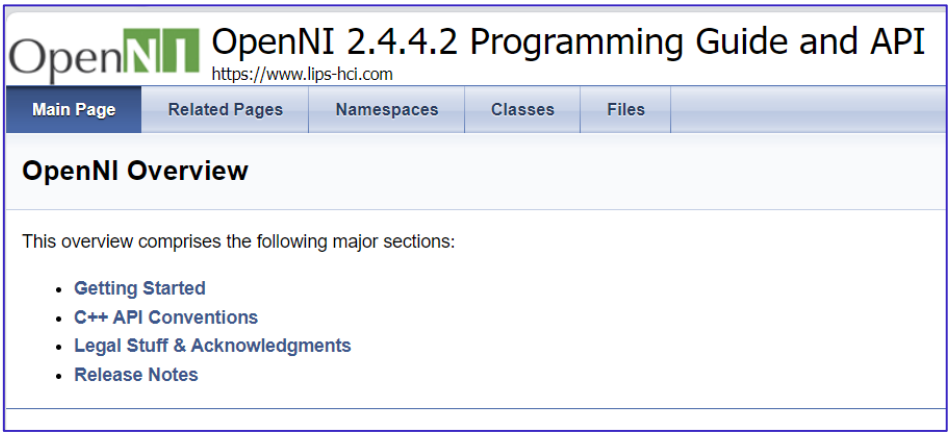
4. APIs

LIPSedge™ T225 / T235 SDK is integrated with OpenNI APIs. The key strength of this robust framework lies in its effortless access to the camera's internal parameters, empowering developers to delve deep into raw data and tailor applications to specific functionalities. Developers can access the programming guide for the API at: **/LIPSedge[Model]-SDK/Documentation.**



1. **Main Page**: This tab provides a clear overview of the OpenNI API, including a quick installation guide, introduction of the coding conventions, legal documents, and the release notes.
2. **Related Pages**: This tab provides a selection of the information that is related to OpenNI.
3. **Namespaces**: This tab provides users with a hierarchical structure of namespaces that categorize the specific functionalities of the API.
4. **Classes**: This tab dives deeper into each individual class within the OpenNI API, outlining its properties and methods to enable developers to fully understand and utilize each element.
5. **Files**: This tab provides a description of the source code files that make up the OpenNI API.

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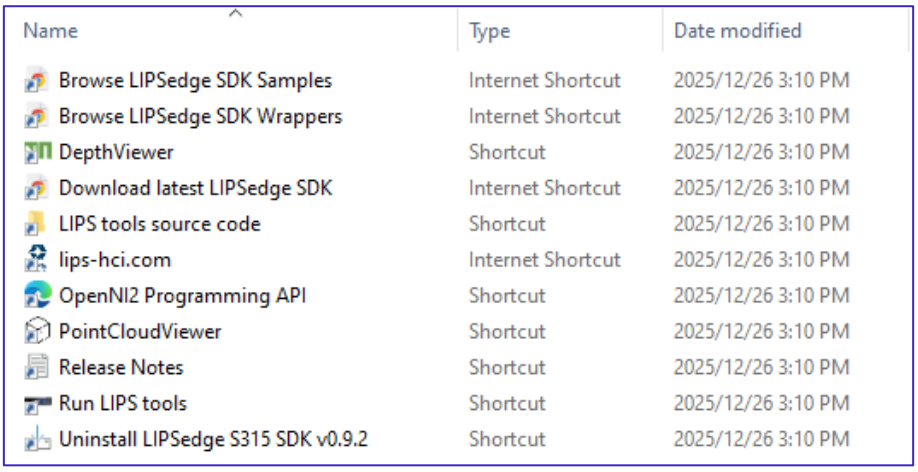
5. Tools

LIPSedge™ T225 / T235 SDK provides a series of executable tools and their source code essential for visualization, data capture, camera parameters acquisition et cetera to facilitate the development of applications and solutions for LIPSedge™ T225 / T235 cameras. These tools and their system components are placed in the following folder:

- **Run LIPS tools Source code**: Contains a series of executable tools; users can refer to *Chapter 5.1 Samples codes* for reference.

- **LIPS tools source code**: Contains a series of the source code of these tools. Users can refer to *Chapter 5.2 Compilation*. These codes can also be downloaded from the link below for the latest updates: https://github.com/lips-hci/LIPSedge-sdk-samples



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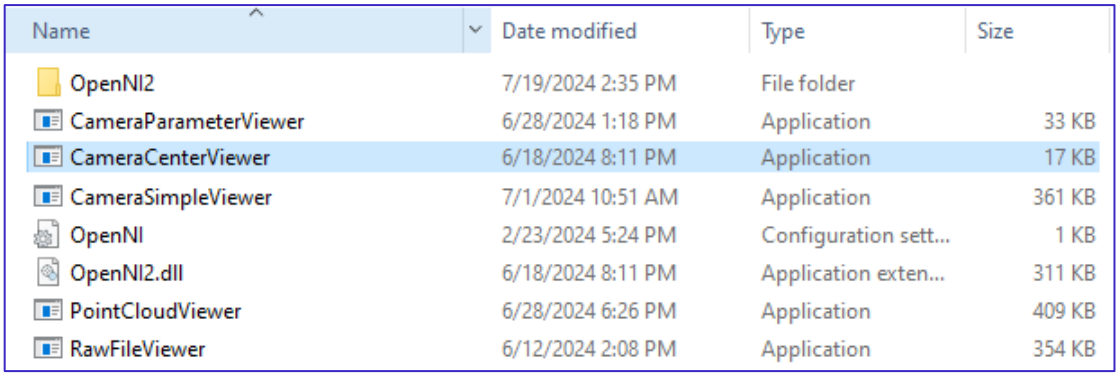
5.1 Sample codes

A. CameraCenterViewer

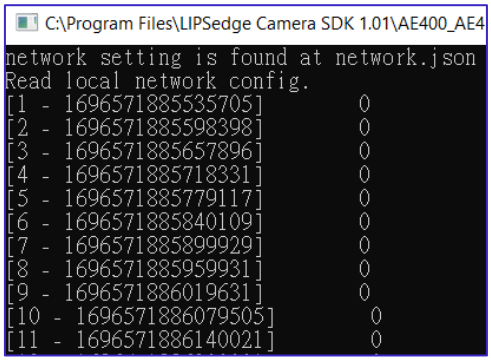
A simple OpenNI2 console program to show depth value at the center point of the frame.

1. In **Bin**, click **CameraCenterViewer.exe.**



Name	Date modified	Type	Size
OpenNI2	7/19/2024 2:35 PM	File folder	
CameraParameterViewer	6/28/2024 1:18 PM	Application	33 KB
CameraCenterViewer	6/18/2024 8:11 PM	Application	17 KB
CameraSimpleViewer	7/1/2024 10:51 AM	Application	361 KB
OpenNI	2/23/2024 5:24 PM	Configuration sett...	1 KB
OpenNI2.dll	6/18/2024 8:11 PM	Application exten...	311 KB
PointCloudViewer	6/28/2024 6:26 PM	Application	409 KB
RawFileViewer	6/12/2024 2:08 PM	Application	354 KB

2. A simple OpenNI2 console program to show depth value at the center point of the frame.



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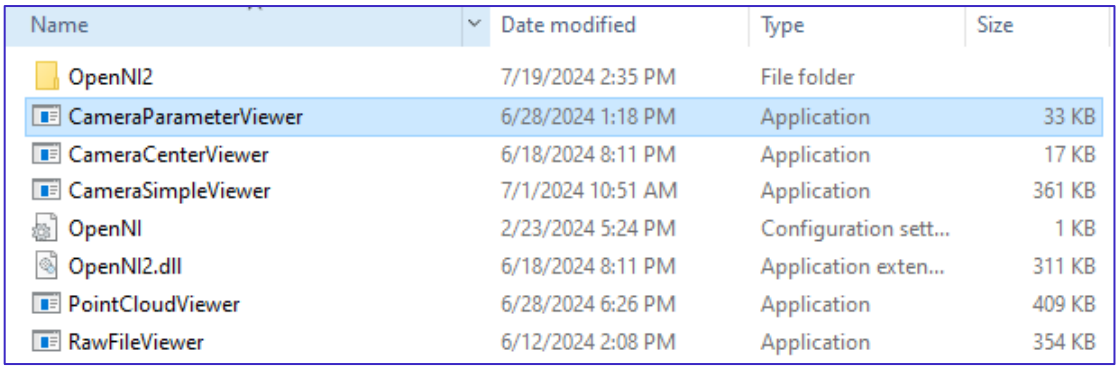
B. CameraParameterViewer

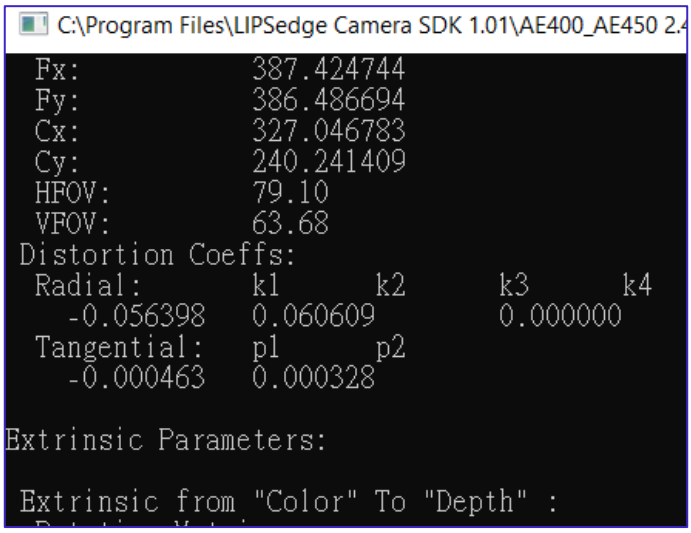
A simple OpenNI2 tool to query supported video modes and list camera intrinsic/extrinsic parameters.

1. In **Bin**, click **CameraParameterViewer.exe**.



Name	Date modified	Type	Size
OpenNI2	7/19/2024 2:35 PM	File folder	
CameraParameterViewer	6/28/2024 1:18 PM	Application	33 KB
CameraCenterViewer	6/18/2024 8:11 PM	Application	17 KB
CameraSimpleViewer	7/1/2024 10:51 AM	Application	361 KB
OpenNI	2/23/2024 5:24 PM	Configuration sett...	1 KB
OpenNI2.dll	6/18/2024 8:11 PM	Application exten...	311 KB
PointCloudViewer	6/28/2024 6:26 PM	Application	409 KB
RawFileViewer	6/12/2024 2:08 PM	Application	354 KB

2. Provides detailed camera parameters for depth, IR, and color cameras.



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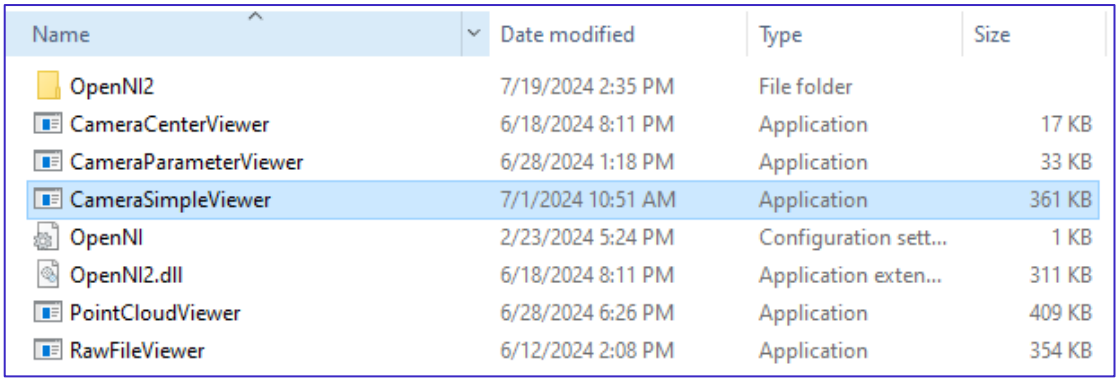
C. CameraSimpleViewer

A simplified version of DepthViewer using OpenCV to display Depth/IR/Color frames.

1. In **Bin**, start **CameraSimpleViewer.exe**



Name	Date modified	Type	Size
OpenNI2	7/19/2024 2:35 PM	File folder	
CameraCenterViewer	6/18/2024 8:11 PM	Application	17 KB
CameraParameterViewer	6/28/2024 1:18 PM	Application	33 KB
CameraSimpleViewer	7/1/2024 10:51 AM	Application	361 KB
OpenNI	2/23/2024 5:24 PM	Configuration sett...	1 KB
OpenNI2.dll	6/18/2024 8:11 PM	Application exten...	311 KB
PointCloudViewer	6/28/2024 6:26 PM	Application	409 KB
RawFileViewer	6/12/2024 2:08 PM	Application	354 KB

2. A simplified version of DepthViewer using OpenCV to display Depth/IR/Color frames.

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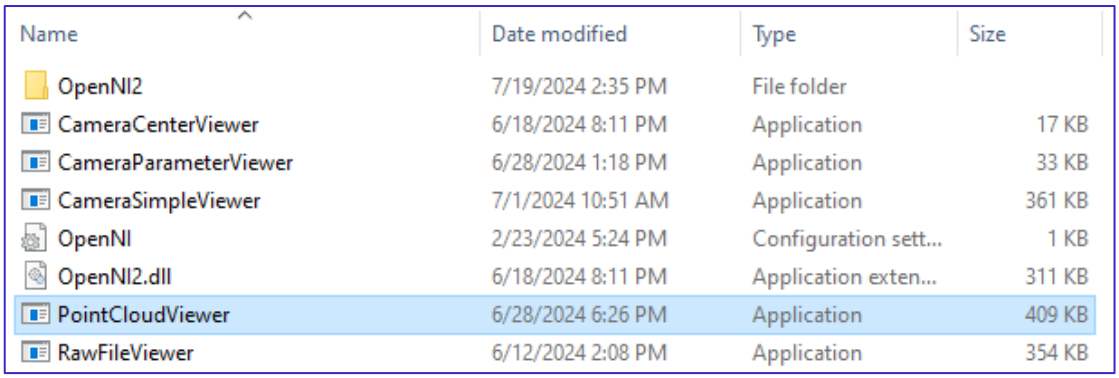
D. PointCloudViewer

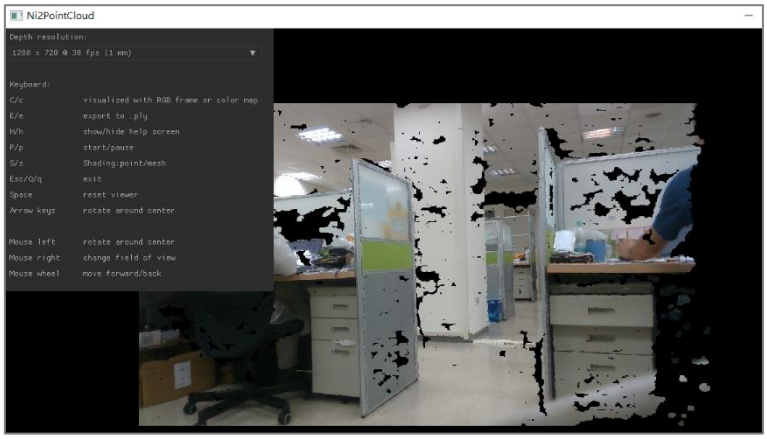
A tool for 3D point cloud visualization through OpenGL.

1. In **Bin**, start **PointCloudViewer.**



Name	Date modified	Type	Size
OpenNI2	7/19/2024 2:35 PM	File folder	
CameraCenterViewer	6/18/2024 8:11 PM	Application	17 KB
CameraParameterViewer	6/28/2024 1:18 PM	Application	33 KB
CameraSimpleViewer	7/1/2024 10:51 AM	Application	361 KB
OpenNI	2/23/2024 5:24 PM	Configuration sett...	1 KB
OpenNI2.dll	6/18/2024 8:11 PM	Application exten...	311 KB
PointCloudViewer	6/28/2024 6:26 PM	Application	409 KB
RawFileViewer	6/12/2024 2:08 PM	Application	354 KB

2. Another OpenNI2 sample for 3D point cloud visualization through OpenGL.



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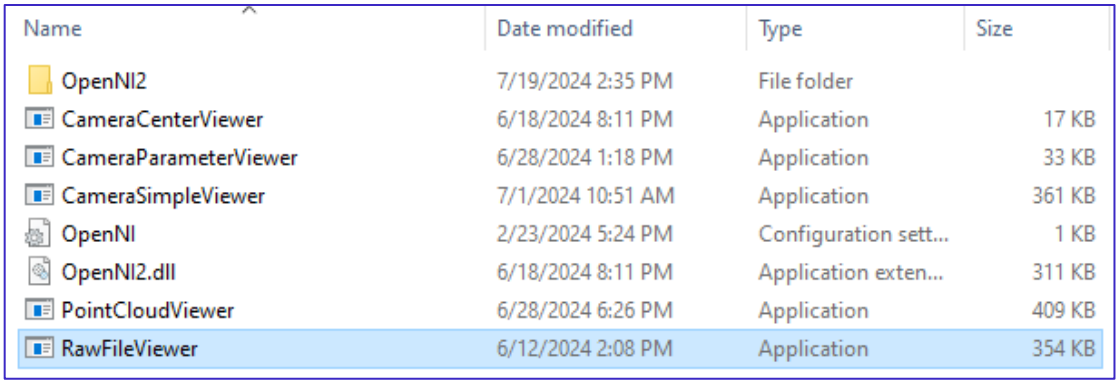
E. RawfileViewer

A tool for reading OpenNI2 frames captured in raw data format. To achieve this:

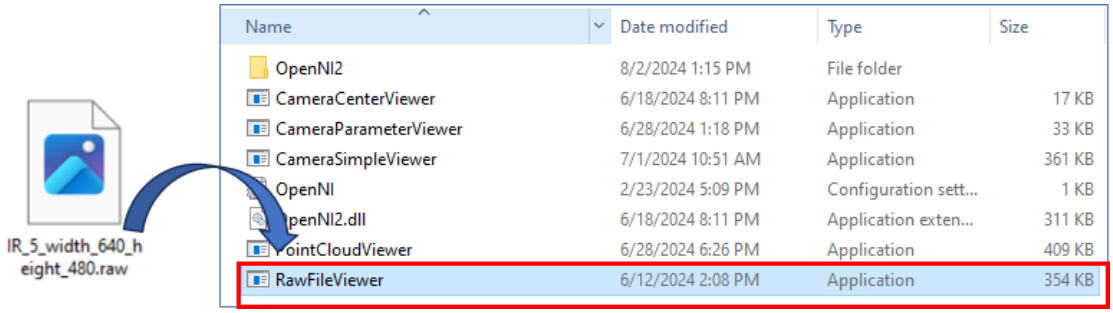


1. Start DepthViewer. Make sure the camera is properly configured and connected.

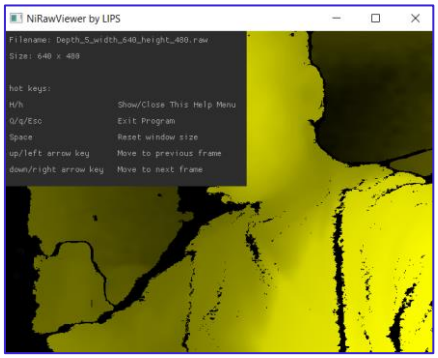
2. Press C, and the current image will be captured.

3. Go to **LIPSedge™ T225 / T235 SDK > OpenNI2 > Tools**

4. Drag a raw image file to the RawFileViewer.



5. The raw image file will be displayed.



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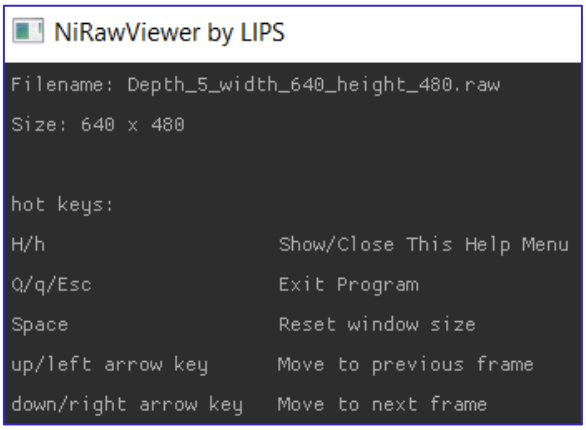
6. Users can navigate through the image with the following hotkeys:
   - **H / h**: Displays / turn off the help menu.
   - **Q / q / Esc**: Exit NiRawViewer-gl.
   - **Space**: Reset adjusted window size to its original resolution.
   - **Up / Left arrow key**: Displays the previous frame.
   - **Down / Right arrow key**: Displays the next frame.



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5.2 Compilation

Examples application's source code: The source code of the executable tools in LIPSedgeSamples. Refer to *Chapter5.1 Sample codes*. In cases where the source code is corrupted, LIPS Corp. provides the source code on LIPS Corp.'s GitHub.

Application name	Source code
LIPSCameraMatrix	LIPSedge-sdk-samples/LIPSCameraMatrix at main · lips-hci/LIPSedge-sdk-samples · GitHub
LIPSImuReader	LIPSedge-sdk-samples/LIPSImuReader at main · lips-hci/LIPSedge-sdk-samples · GitHub
Ni2CenterRead	LIPSedge-sdk-samples/Ni2CenterRead at main · lips-hci/LIPSedge-sdk-samples · GitHub
Ni2EventBasedViewer-gl	LIPSedge-sdk-samples/Ni2EventBasedViewer-gl at main · lips-hci/LIPSedge-sdk-samples · GitHub
Ni2PointCloud-gl	LIPSedge-sdk-samples/Ni2PointCloud-gl at main · lips-hci/LIPSedge-sdk-samples · GitHub
Ni2RawViewer-gl:	LIPSedge-sdk-samples/Ni2RawViewer-gl at main · lips-hci/LIPSedge-sdk-samples · GitHub
Ni2SimpleViewer-cv	LIPSedge-sdk-samples/Ni2SimpleViewer-cv at main · lips-hci/LIPSedge-sdk-samples · GitHub
Ni2SimpleViewer-gl:	LIPSedge-sdk-samples/Ni2SimpleViewer-gl at main · lips-hci/LIPSedge-sdk-samples · GitHub

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6. Supported Language & Wrappers

LIPSedge™ T225 / T235 SDK supports various programming Languages/ Libraries/ Frameworks to enhance the development project. These programming language-based SDK and libraries/ frameworks are available at LIPS Corp's GitHub.

Type	Name	Description	GitHub Link
Language	Python3	Support Python3	python3 · GitHub
	.NET	Support for .NET languages with examples in C#	.NET GitHub
	C#	Support C#	Coming Soon.
	Java	Support Java	Coming Soon.
Library	OpenCV	Integration with OpenCV computer-vision library	OpenCV GitHub
	PCL	Integration with Point Cloud Library	Coming Soon.
Framework	ROS	Integration with Robot Operating System (ROS)	Coming Soon.
	ROS2	Integration with Robot Operating System 2 (ROS 2)	Coming Soon.
	ISAAC	Support NV Isaac robot platform as depth camera data provider	Coming Soon.
	Halcon	Integration with HALCON development environment	Coming Soon.

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7. Application & Middleware Supports

In addition to the LIPSedge™ T225 / T235, LIPS Corp. also offers a diverse range of advanced 3D cameras and comprehensive solutions that cater to various imaging and sensing requirements. For details, refer to the following chapter:

7.1 Applications

LIPS Corp. offers a wide range of advanced 3D camera kits. These offerings encompass various technologies to cater to diverse imaging and sensing requirements. For details, refer to. https://www.lips-hci.com/.

- LIPSMetric™
- LIPSense™

7.2 Middleware

LIPS Corp. offers exclusive middleware solutions. These solutions encompass various technologies to cater to diverse imaging and sensing requirements. For details, refer to. https://www.lips-hci.com/.

- LIPSMetric™
- LIPSense™

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https://www.lips-hci.com

8. SDK Tutorial

LIPS Corp. provides extensive support for a variety of SDKs. LIPS Corp.'s GitBook tutorial offers practical examples and applications with hands-on guidance based on the following platforms:

Name	Description
C++	https://lips-hci.gitbook.io/lips-developer-documentation/sdk-code-samples-and-languages-wrappers/openni2/overview
Python	https://lips-hci.gitbook.io/lips-developer-documentation/sdk-code-samples-and-languages-wrappers/openni2/overview-1
Java	https://lips-hci.gitbook.io/lips-developer-documentation/sdk-code-samples-and-languages-wrappers/openni2/overview-2
OpenCV	https://lips-hci.gitbook.io/lips-developer-documentation/sdk-code-samples-and-languages-wrappers/openni2/overview-3
GenICam	https://lips-hci.gitbook.io/lips-developer-documentation/sdk-code-samples-and-languages-wrappers/openni2/genicam
ROS	https://lips-hci.gitbook.io/lips-developer-documentation/sdk-code-samples-and-languages-wrappers/openni2/overview-4

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9. Appendix

9.1 Regulatory Compliance Notice

FCC Compliance

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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FCC Label Notice

This device complies with part 15 of the 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.

IEC/ EN 60825 + FDA

Laser Safety

CLASS 1 LASER PRODUCT

COSUMER LASER PRODUCT

EN 50689:2021

This device complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

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CE Compliance

Warning:

This is a class A product. In a domestic environment this product may cause radio interference in
which case the user may be required to take adequate measures.

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