SynexensROS1 User Manual v4.3.0

Revised historical versions					
Date	ROS version	SDK version	Documentation version	Description	Author
202212114	v4.0.1	v4.0.3.0	v4.0.1	Initial version	YSY
20230907	v4.1.0	v4.1.0.0	v4.1.0	Update SDK	YSY
20240209	v4.1.3	v4.1.3.0	v4.1.3	Document updates	YSY
20250427	v4.3.0	v4.2.4.0	v4.3.0	Add Yaml configuration	YSY

Contents

1. Foreword

This ROS is developed based on SDK4.+ please read the SDK instructions in advance before use. This program only implements some functions. Please use it according to your actual needs.

2. Overview

Supported devices: cs20 Single band cs20 Dual band cs30 Single band cs30 Dual band CS20-P cs40

Supported systems: ubuntu20.04_x86, ubuntu18.04_x86

Supported ROS version: Noetic Melodic

3. Compile and Run

3.1. Compile

3.1.1. Package file directory knot

synexens_ros1

├── CMakeLists.txt

├── ext

```
|   └── sdk
|       ├── include
|       ├── lib
|       └── opencv
├── include
|   └── synexens_ros1
|       ├── SYCalibrationTransformData.h
|       ├── SYRosDevice.h
|       ├── SYRosDeviceParmas.h
|       └── SYRosTypes.h
├── launch
|   ├── driver.launch
|   └── viewer.launch
├── package.xml
├── README.md
├── rviz
|   └── view.rviz
├── script
|   ├── setup.sh
|   └── synexens-usb.rules
├── src
|   ├── SYCalibrationTransformData.cpp
```

```
│   ├── SYRosDevice.cpp
│   ├── SYRosDeviceParams.cpp
│   └── SYRosNode.cpp
```

Core code file: include/synexens_ros1/*.h src/*.cpp Main node functionality

Core package file: CMakeLists.txt package.xml ROS package core file

SDK dependencies: ext/sdk synexensSDK4.0 dependency libraries

Rviz visualization file: rviz/view.rviz Rviz configuration

USB Rules: scripts/synexens-usb.rules setup.sh USB permission file

launch file: launch/*.launch ROSLaunch boot file

3.1.2. Compiled by catkin

1. Extract the compressed package file in a Linux system
2. Copy the synexens_ros1 package to the catkin_ws(custom name)/src folder in the workspace
3. Execute the compilation command: $cd catkin_ws && catkin_make && catkin_make install

3.1.3. Use synexens_ros1 for the workspace

1. Run the ROS core roscore
2. $ cd catkin_ws && source ./install/setup.bash

3. $roslaunch synexens_ros1 driver.launch or $roslaunch synexens_ros1 View.launch

3.1.4. Compile run problem summary

1. Prompt for missing dependent libraries: The.so file in the ext/sdk/lib folder where the sdk depends needs to be copied to the catkin_ws/devel/lib directory, and then re-run
2. Compile alert for missing library files: Note that files must be decompressed on a Linux system
3. When running, it prompts that the camera cannot open and there is no permission: You need to run the script script/setup.sh

3.1.5. Node provides topic

Because multiple devices can be connected to configure whether a topic is displayed or not, topic communication is not fixed.

xxx/depth_raw (' sensor_msgs::Image ') depth image data

xxx/depth_info (' sensor_msgs::CameraInfo ') depth camera information

xxx/ir_raw (' sensor_msgs::Image ') IR image data

xxx/ir_info (' sensor_msgs::CameraInfo ') IR camera information

xxx/rgb_raw (' sensor_msgs::Image ') RGB image data

xxx/points2 (' sensor_msgs::PointCloud2 ') point cloud image data

3.1.6. Server parameters function at startup

Parameters such as camera filtering have now been replaced with Yaml configuration. For Yaml configuration details, see the SDK documentation. The Launch file currently only provides some basic configurations.

3.2 SDK Replacement (e.g., need to run to arm platform)

Different platforms rely on different SDKS. If we need to run to another platform (for example, armv8), we need to find the corresponding platform version of the SDK, manually copy it to the ext/sdk directory, and replace the library files and header files.

3.2.1. Steps for replacing the armv8 platform

Find the corresponding platform version of the SDK and ensure its normal operation

2 Replace ext/sdk/include/*.h

3 Replace ext/sdk/lib/*.so

4 Replace ext/sdk/opencv/*.so

5. devel/lib/*.so needs to be replaced at runtime

Note: The SDK for Linux systems is best packaged using tar, and decompression should be done within Linux. To ensure executable permissions and soft links for library files.

4. Notes

4.1. PointCloud size issues

Due to the display issue of the rviz GUI tool, the actual point cloud data is 1000 times larger than the data in ROS. The point relationship between the point cloud saved through the GUI coincides with that of the ROS point cloud, with a difference of 1000 times in size.

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