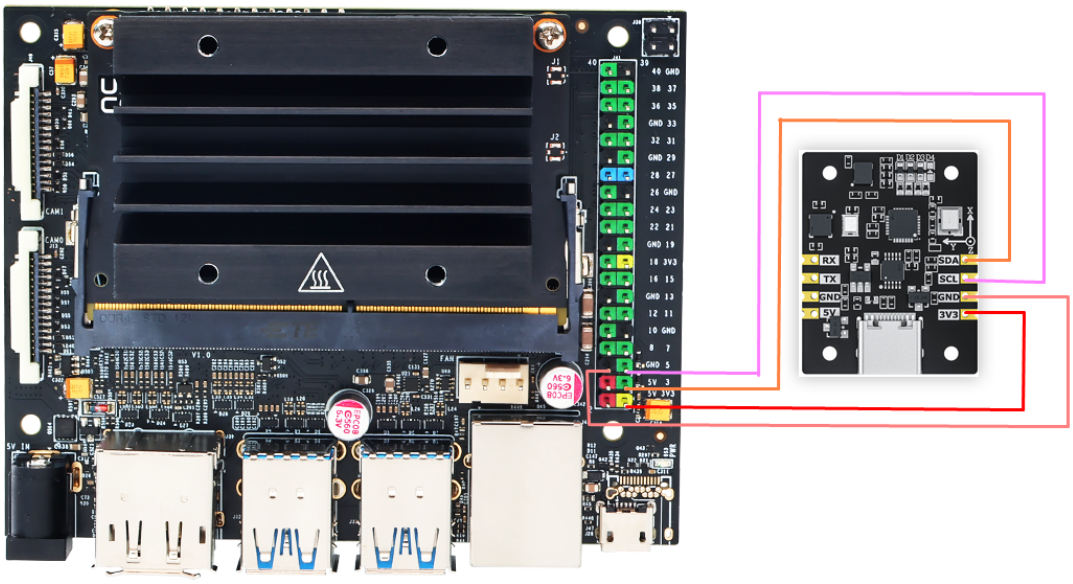
Viewing IMU Data on Jetson

1. Connecting the Device

This tutorial uses the Jetson Nano motherboard as an example.

Connect the IMU attitude sensor to the Jetson Nano's I2C interface as shown in the diagram below.



IMU Attitude Sensor	Jetson nano (Physical Pins)
SDA	3
SCL	5
GND	GND
3.3V	3.3V

GPIO and BCM Comparison Table

BCM code	Function	Physical pin		BCM code	Function
	3V3	1	2	5V	
2	SDA	3	4	5V	
3	SCL	5	6	GND	
4	D4	7	8	D14(TXD)	14
	GND	9	10	D15(RXD)	15
17	D17	11	12	D18	18
27	D27	13	14	GND	
22	D22	15	16	D23	23
	3V3	17	18	D24	24
10	D10	19	20	GND	
9	D9	21	22	D25	25
11	D11	23	24	D8	8
	GND	25	26	D7	7
0	DO(ID_SD)	27	28	D1(ID_SC)	1
5	D5	29	30	GND	
6	D6	31	32	D12	12
13	D13	33	34	GND	
19	D19	35	36	D16	16
26	D26	37	38	D20	20
	GND	39	40	D21	21

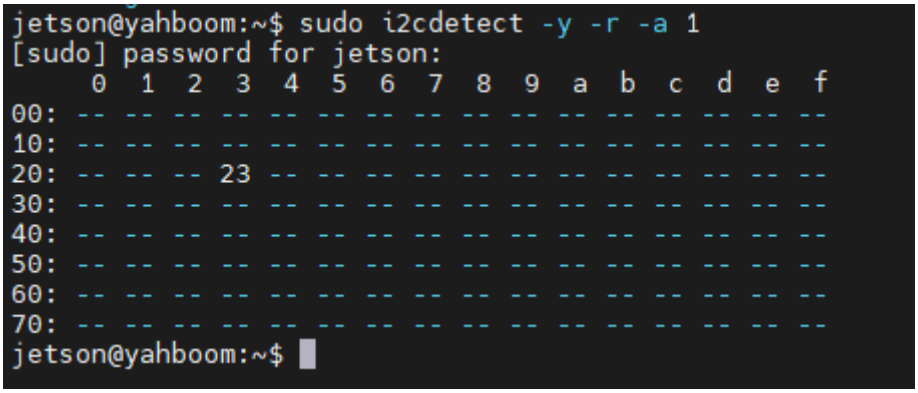
2. Check Device Status

First, install I2Ctool. In the terminal, enter:

```
sudo apt-get update
sudo apt-get install -y i2c-tools
```

Check the I2C device. The I2C address corresponding to the IMU is 0x23

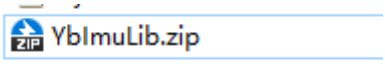
```
sudo i2cdetect -y -r -a 1
```



3. Install Driver Library

3.1 Download Python Driver Library File

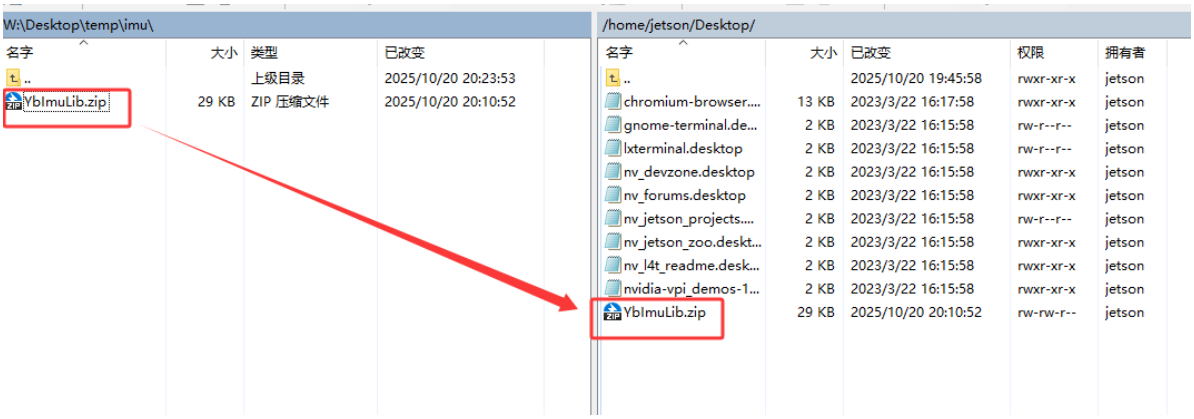
The latest version of the driver library, named YbImuLib.zip, is provided in the data folder.



3.2 Transfer Files

Drag the driver library compressed file onto the Jetson desktop using WinSCP software.

The driver library file can be deleted after successful installation.



If you are unfamiliar with using WinSCP to transfer files, please refer to the following webpage for detailed WinSCP installation and operation instructions:

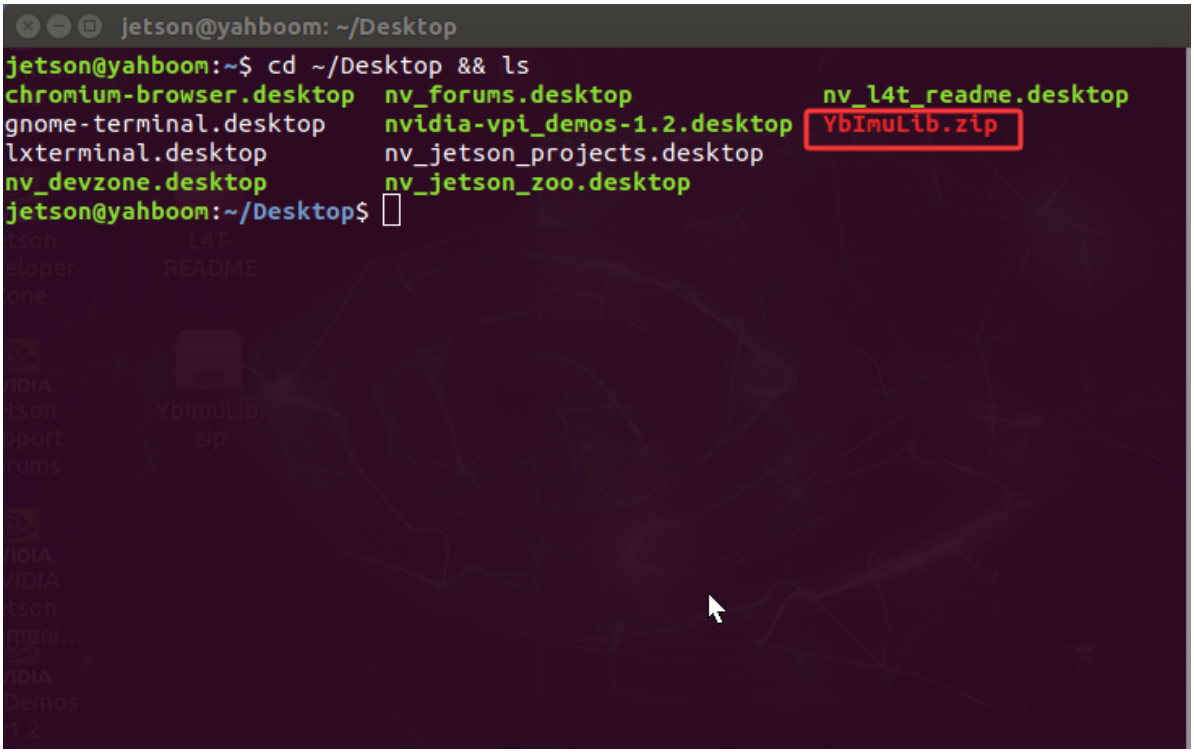
File Transfer

3.3 Installing Driver Libraries

Open the terminal on your Jetson Nano and enter the following command to extract the files.

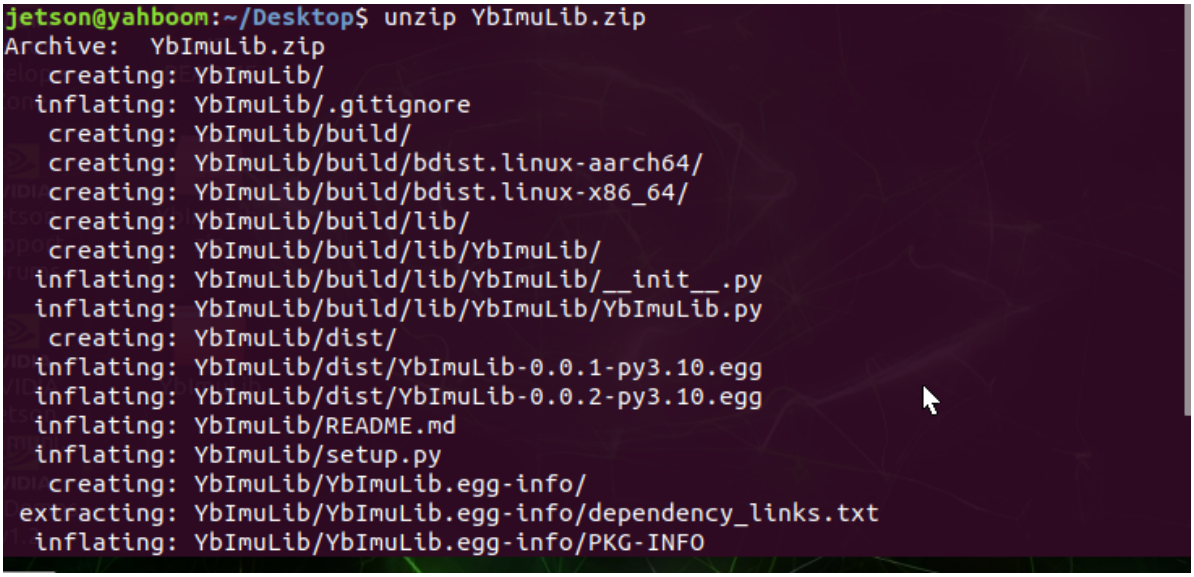
Access the desktop and check if the file exists; the target file is highlighted in the red box.

```
cd ~/Desktop && ls
```



Unzip the file

```
unzip YbImuLib.zip
```

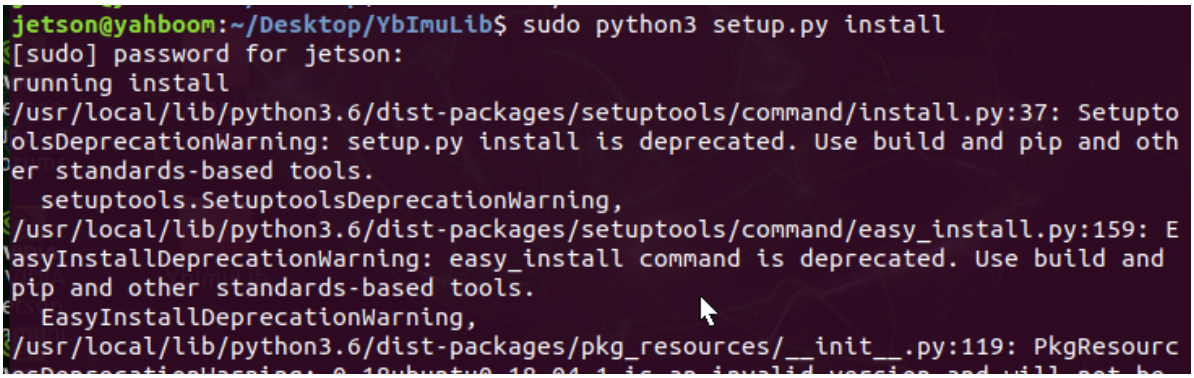


Enter the driver library folder

```
cd YbImuLib
```

Run the installation command. If you see the version number displayed at the end, the installation was successful. This command will overwrite any previously installed Rosmaster_Lib driver library.

```
sudo python3 setup.py install
```



Install required libraries

```
sudo pip3 install pyserial
sudo pip3 install smbus2
```

4. View IMU data

Refer to **3.2 File Transfer**, use WinSCP to transfer the **YbImu_ReadData_I2C.py** file to the Jetson Nano, and then run the command

```
python3 YbImu_ReadData_I2C.py
```

```
jetson@yahboom:~/Desktop$ python3 YbImu_ReadData_I2C.py
Firmware version: 0.0.9
Press Ctrl+C to exit the program.
------ Sensor Data ------
Acceleration [g]:       x= 0.000, y=-1.017, z= 0.175
Gyroscope [rad/s]:      x= 0.000, y= 0.000, z= 0.000
Magnetometer [uT]:      x=-25.001, y=-0.171, z=-23.902
Quaternion:             w= 0.30919, x=-0.21327, y=-0.60492, z= 0.69973
Euler Angle [deg]:      roll=-79.73, pitch=-4.34, yaw= 135.83
Barometer:              height= 0.00 m, temperature= 0.00 °C
                        pressure= 0.00000 Pa, pressure_diff= 0.00000 Pa
------------------------
```

Note: The above data is from a 9-axis IMU. Data from the 6-axis IMU is not available from the magnetometer or barometer. Data from the 9-axis IMU is not available from the barometer.

5. Precautions

When using an Orin series motherboard, the I2C bus number needs to be modified according to the actual situation. The modification location is shown in the image below. It is usually bus number 7.

```python
#!/usr/bin/env python3

"""
请先确保YbImuLib已正确安装 / Please make sure YbImuLib is properly installed
"""

import time
from YbImuLib import YbImuI2c


# I2C bus number, corresponding to /dev/i2c-<bus> / I2C 总线号，对应 /dev/i2c-<bus>
I2C_BUS = 7

# Interval between data prints in seconds / 数据打印间隔（秒）
READ_INTERVAL = 0.1


def create_i2c_device() -> YbImuI2c:
    """Create an I2C IMU instance.

        创建 I2C IMU 实例
    """
```