1. 内参标定

The intrinsic parameters include:

- For the accelerometer:
  - Scale factor (sensitivity) – which are terms used to multiply the raw measurements to ensure the output is metric scale. Mathmatically written as s_x, s_y, s_z
  - Bias (zero offset) – which are terms used to cancel any non-zero values when the sensor should be reading zero. Mathmatically written as $\vec{a}_{bais}$
  - Off-axis terms – these terms are used to correct if the axes of the accelormeter are not orthogonal. Mathmatically written as $c_{xy}, c_{yx}, c_{xz}, c_{zx}, c_{zy}, c_{yz}$
- For the gyroscope:
  - Bias (zero offset) – which are terms used to cancel any non-zero values when then sensor should be reading zero. Mathmatically written as omega bais, $\vec{\omega}_{bais}$

1.1. 误差模型

1. 加速度计

$$\vec{a}_{true} = \begin{bmatrix} s_x & c_{xy} & c_{xz} \\ c_{yx} & s_y & c_{yz} \\ c_{zx} & c_{zy} & s_z \end{bmatrix} \vec{a}_{raw} - \vec{a}_{bais}$$

2. 角速度计

$$\vec{\omega}_{true} = \vec{\omega}_{raw} - \vec{\omega}_{bais}$$

1.2. 安装python及相关库

```
sudo apt-get install python3
sudo apt-get install python3-pip
sudo pip3 install numpy
```

1.3. 安装pyrealsense2

```
sudo pip3 install pyrealsense2
```

1.4. 标定py脚本

脚本文件所在位置，在SDK文件夹中

```
/librealsense-2.30.1/tools/rs-imu-calibration
```

运行py脚本

```
python rs-imu-calibration
```

2. 外参标定

The extrinsic parameters include:

- Rotation - rotation from the left infrared (IR) camera (IR1) to IMU, specified as a 3x3 rotation matrix
- Translation - translation from the left IR camera to IMU, specified as a 3x1 vector in millimeters

官方未提供标定工具，可采用kalibr标定