

SDK 软件包 18.04 升级操作说明

摘要

本 SDK 软件包，适用于 ubuntu 18.04 对应的 ROS melodic 版本

下载路径：

<http://www.cothinkrobotics.com/zlxz-C62-P1.html>

前置条件：

Ubuntu 18.04 安装完毕
ROS melodic 安装完毕

一、创建工作空间

1.1 创建工作空间

```
$ mkdir -p ~/ros_ws/src
```

1.2 Source

```
$ source /opt/ros/melodic/setup.bash
```

1.3 编译工作空间

```
$ cd ~/ros_ws  
$ catkin_make  
$ catkin_make install
```

```
yangmelodic@yangmelodic-ThinkPad-T450: ~/ros_ws
File Edit View Search Terminal Help
catkin_init_workspace      catkin_test_results
catkin_make                catkin_topological_order
yangmelodic@yangmelodic-ThinkPad-T450:~/ros_ws$ catkin_make
Base path: /home/yangmelodic/ros_ws
Source space: /home/yangmelodic/ros_ws/src
Build space: /home/yangmelodic/ros_ws/build
Devel space: /home/yangmelodic/ros_ws/devel
Install space: /home/yangmelodic/ros_ws/install
####
#### Running command: "make cmake_check_build_system" in "/home/yangmelodic/ros_ws/build"
####
-- Using CATKIN_DEVEL_PREFIX: /home/yangmelodic/ros_ws/devel
-- Using CMAKE_PREFIX_PATH: /opt/ros/melodic
-- This workspace overlays: /opt/ros/melodic
-- Found PythonInterp: /usr/bin/python2 (found suitable version "2.7.17", minimum required is "2")
-- Using PYTHON_EXECUTABLE: /usr/bin/python2
-- Using Debian Python package layout
-- Using empy: /usr/bin/empy
-- Using CATKIN_ENABLE_TESTING: ON
-- Call enable_testing()
-- Using CATKIN_TEST_RESULTS_DIR: /home/yangmelodic/ros_ws/build/test_results
-- Found qtest sources under '/usr/src/qooqletest': qtests will be built
```

1.4 修改 .bashrc 文件

```
source ~/ros_ws/devel/setup.bash
source /opt/ros/melodic/setup.bash
```

将以上指令写入.bashrc 脚本的末行

```
yangmelodic@yangmelodic-ThinkPad-T450: ~
File Edit View Search Terminal Help
yangmelodic@yangmelodic-ThinkPad-T450:~$ ls -al
total 67596
drwxr-xr-x 20 yangmelodic yangmelodic 4096 4月 8 14:46 .
drwxr-xr-x  4 root         root         4096 4月 8 11:31 ..
-rw-r----- 1 yangmelodic yangmelodic 5796 4月 8 14:46 .bash_history
-rw-r--r--  1 yangmelodic yangmelodic  220 4月 7 10:29 .bash_logout
-rw-r--r--  1 yangmelodic yangmelodic 3807 4月 8 14:46 .bashrc
drwx----- 20 yangmelodic yangmelodic 4096 4月 8 11:12 .cache
drwx----- 17 yangmelodic yangmelodic 4096 4月 8 14:26 .config
drwxr-xr-x  2 yangmelodic yangmelodic 4096 4月 8 14:43 Desktop
drwxr-xr-x  3 yangmelodic yangmelodic 4096 4月 7 18:48 Documents
drwxr-xr-x  3 yangmelodic yangmelodic 4096 4月 8 09:19 Downloads
-rw-rw-r--  1 yangmelodic yangmelodic 116466 1月 7 2016 .Downloads
-rw-r--r--  1 yangmelodic yangmelodic  8980 4月 7 10:29 examples.desktop
drwx-----  3 yangmelodic yangmelodic 4096 4月 7 18:48 .gnupg
-rw-r-----  1 yangmelodic yangmelodic 2758 4月 8 10:08 .ICEauthority
drwx-----  3 yangmelodic yangmelodic 4096 4月 7 10:41 .local
drwx-----  5 yangmelodic yangmelodic 4096 4月 7 13:21 .mozilla
drwxr-xr-x  2 yangmelodic yangmelodic 4096 4月 7 10:41 Music
drwxr-xr-x  2 yangmelodic yangmelodic 4096 4月 8 14:18 Pictures
```

```

libmythes-1.2-0 libneon27-gnutls libodfgen-0.1-1 liborcus-0.13-0
libpagemaker-0.0-0 libraptor2-0 librasqal3 librdf0 librevenge-0.0-0
libsuitesparseconfig5 libvisio-0.1-1 libwps-0.10-10 libwpg-0.3-3
libwps-0.4-4 libxmlsec1 libxmlsec1-nss libyajl2 lp-solve uno-libs3 ure
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  ros-melodic-effort-controllers
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 80.7 kB of archives.
After this operation, 339 kB of additional disk space will be used.
Get:1 http://mirrors.tuna.tsinghua.edu.cn/ros/ubuntu bionic/main amd64 ros-melodic-effort-controllers amd64 0.17.2-1bionic.20220222.191045 [80.7 kB]
Fetched 80.7 kB in 0s (211 kB/s)
Selecting previously unselected package ros-melodic-effort-controllers.
(Reading database ... 266379 files and directories currently installed.)
Preparing to unpack .../ros-melodic-effort-controllers_0.17.2-1bionic.20220222.191045_amd64.deb ...
Unpacking ros-melodic-effort-controllers (0.17.2-1bionic.20220222.191045) ...
Setting up ros-melodic-effort-controllers (0.17.2-1bionic.20220222.191045) ...
yangmelodic@yangmelodic-ThinkPad-T450:~$

```

2.1 Baxter 机器人安装相关依赖

1) 安装 ros-melodic-effort-controllers

```
$ sudo apt-get install ros-melodic-effort-controllers
```

```

yangmelodic@yangmelodic-ThinkPad-T450: ~
File Edit View Search Terminal Help
yangmelodic@yangmelodic-ThinkPad-T450:~/ros_ws/src$ cd ..
yangmelodic@yangmelodic-ThinkPad-T450:~/ros_ws$ cd
yangmelodic@yangmelodic-ThinkPad-T450:~$ sudo apt-get install ros-melodic-effort-controllers
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  fonts-liberation2 fonts-opensymbol gstreamer1.0-gtk3 libabw-0.1-1
  libcdr-0.1-1 libclucene-contribs1v5 libclucene-core1v5 libcmis-0.5-5v5
  libcolamd2 libe-book-0.1-1 libeot0 libepubgen-0.1-1 libetonyek-0.1-1
  libexsltcat-2.0-0 libexsltcat-data libfreehand-0.1-1 libgpgmepp6
  liblangtag-common liblangtag1 libmhash2 libmpub-0.1-1 libmwaw-0.3-3
  libmythes-1.2-0 libneon27-gnutls libodfgen-0.1-1 liborcus-0.13-0
  libpagemaker-0.0-0 libraptor2-0 librasqal3 librdf0 librevenge-0.0-0
  libsuitesparseconfig5 libvisio-0.1-1 libwps-0.10-10 libwpg-0.3-3
  libwps-0.4-4 libxmlsec1 libxmlsec1-nss libyajl2 lp-solve uno-libs3 ure
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  ros-melodic-effort-controllers
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 80.7 kB of archives.
After this operation, 339 kB of additional disk space will be used.
Get:1 http://mirrors.tuna.tsinghua.edu.cn/ros/ubuntu bionic/main amd64 ros-melodic-effort-controllers amd64 0.17.2-1bionic.20220222.191045 [80.7 kB]
Fetched 80.7 kB in 0s (211 kB/s)
Selecting previously unselected package ros-melodic-effort-controllers.
(Reading database ... 266379 files and directories currently installed.)
Preparing to unpack .../ros-melodic-effort-controllers_0.17.2-1bionic.20220222.191045_amd64.deb ...
Unpacking ros-melodic-effort-controllers (0.17.2-1bionic.20220222.191045) ...
Setting up ros-melodic-effort-controllers (0.17.2-1bionic.20220222.191045) ...
yangmelodic@yangmelodic-ThinkPad-T450:~$

```



```
yangmelodic@yangmelodic-ThinkPad-T450: ~
File Edit View Search Terminal Help
Processing triggers for libc-bin (2.27-3ubuntu1.5) ...
yangmelodic@yangmelodic-ThinkPad-T450:~$ sudo apt-get install git-core python-arg
gparse python-wstool python-vcstools python-rosdep ros-melodic-control-msgs ros-
melodic-joystick-drivers
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'git' instead of 'git-core'
Note, selecting 'libpython2.7-stdlib' instead of 'python-argparse'
git is already the newest version (1:2.17.1-1ubuntu0.9).
libpython2.7-stdlib is already the newest version (2.7.17-1~18.04ubuntu1.7).
python-rosdep is already the newest version (0.21.0-1).
python-vcstools is already the newest version (0.1.42-1).
python-wstool is already the newest version (0.1.17-1).
ros-melodic-control-msgs is already the newest version (1.5.1-1bionic.20210505.0
12619).
ros-melodic-control-msgs set to manually installed.
The following packages were automatically installed and are no longer required:
 fonts-liberation2 fonts-opensymbol gstreamer1.0-gtk3 libabw-0.1-1
 libcdr-0.1-1 libclucene-contribs1v5 libclucene-core1v5 libcmis-0.5-5v5
 libcolamd2 libe-book-0.1-1 libeot0 libepubgen-0.1-1 libetonyek-0.1-1
 libexttextcat-2.0-0 libexttextcat-data libfreehand-0.1-1 libgpgmepp6
 liblangtag-common liblangtag1 libmhash2 libmispub-0.1-1 libmwaw-0.3-3
 libmythes-1.2-0 libneon27-gnutls libodfgen-0.1-1 liborcus-0.13-0
```

2) 安装 python 相关依赖

```
$ sudo apt-get install git-core python-argparse python-wstool python-vcstools python-rosdep
ros-melodic-control-msgs ros-melodic-joystick-drivers
```

```
Setting up libstd1.2debian:amd64 (1.2.15+dfsg2-0.1ubuntu0.1) ...
Setting up evtest (1:1.33-1build1) ...
Setting up libspnav-dev (0.2.3-1) ...
Setting up libcwild1 (0.6.00+svn201-4) ...
Setting up ros-melodic-spacenv-node (1.14.0-1bionic.20220127.152306) ...
Setting up libevemu3:amd64 (2.6.0-0.1) ...
Setting up libusb-0.1-4:amd64 (2:0.1.12-31) ...
Setting up evemu-tools (2.6.0-0.1) ...
Setting up joystick (1:1.6.0-2) ...
Setting up python-cwild (0.6.00+svn201-4) ...
Setting up libusb-dev (2:0.1.12-31) ...
Setting up ros-melodic-joy (1.14.0-1bionic.20220127.152644) ...
Setting up ros-melodic-wiimote (1.14.0-1bionic.20220127.152338) ...
Setting up ros-melodic-ps3joy (1.14.0-1bionic.20220127.163540) ...
Setting up ros-melodic-joystick-drivers (1.14.0-1bionic.20220127.163846) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for ureadahead (0.100.0-21) ...
ureadahead will be reprofiled on next reboot
Processing triggers for libc-bin (2.27-3ubuntu1.5) ...
Processing triggers for systemd (237-3ubuntu10.53) ...
yangmelodic@yangmelodic-ThinkPad-T450:~$
```

3) ROS 工具仿真相关依赖

```
$ sudo apt-get install gazebo9 ros-melodic-qt-build ros-melodic-driver-common
ros-melodic-gazebo-ros-control ros-melodic-gazebo-ros-pkgs ros-melodic-ros-control
ros-melodic-control-toolbox ros-melodic-realtime-tools ros-melodic-ros-controllers ros-melodic-xacro
python-wstool ros-melodic-tf-conversions ros-melodic-kdl-parser ros-melodic-moveit-planners
ros-melodic-moveit-ros-move-group
```

```
yangmelodic@yangmelodic-ThinkPad-T450: ~  
File Edit View Search Terminal Help  
cd..: command not found  
yangmelodic@yangmelodic-ThinkPad-T450:~/ros_ws/src$ cd ..  
yangmelodic@yangmelodic-ThinkPad-T450:~/ros_ws$ cd  
yangmelodic@yangmelodic-ThinkPad-T450:~$ sudo apt-get install ros-melodic-effort-  
-controllers  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following packages were automatically installed and are no longer required:  
 fonts-liberation2 fonts-opensymbol gstreamer1.0-gtk3 libabw-0.1-1  
 libcdr-0.1-1 libclucene-contribs1v5 libclucene-core1v5 libcmis-0.5-5v5  
 libcolamd2 libe-book-0.1-1 libeot0 libepubgen-0.1-1 libetonyek-0.1-1  
 libexttextcat-2.0-0 libexttextcat-data libfreehand-0.1-1 libgpgmepp6  
 liblangtag-common liblangtag1 libmhash2 libmspub-0.1-1 libmwaw-0.3-3  
 libmythes-1.2-0 libneon27-gnutls libodfgen-0.1-1 liborcus-0.13-0  
 libpagemaker-0.0-0 libraptor2-0 librasqal3 librdf0 librevenge-0.0-0  
 libsuitesparseconfig5 libvisio-0.1-1 libwps-0.10-10 libwpg-0.3-3  
 libwps-0.4-4 libxmlsec1 libxmlsec1-nss libyajl2 lp-solve uno-libs3 ure  
Use 'sudo apt autoremove' to remove them.  
The following NEW packages will be installed:  
 ros-melodic-effort-controllers  
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.  
Need to get 80.7 kB of archives.  
After this operation, 339 kB of additional disk space will be used.  
yangmelodic@yangmelodic-ThinkPad-T450: ~  
File Edit View Search Terminal Help  
Setting up python-webencodings (0.5-2) ...  
Setting up ros-melodic-driver-common (1.6.0-0bionic.20220222.193855) ...  
Setting up ros-melodic-ackermann-steering-controller (0.17.2-1bionic.20220222.19  
1606) ...  
Setting up ros-melodic-moveit-msgs (0.10.1-1bionic.20220127.163743) ...  
Setting up ros-melodic-ros-controllers (0.17.2-1bionic.20220222.192151) ...  
Setting up liboctomap-dev (1.8.1+dfsg-1) ...  
Setting up python-html5lib (0.999999999-1) ...  
Setting up libfcl-dev (0.5.0-5) ...  
Setting up ros-melodic-moveit-core (1.0.10-1bionic.20220307.023150) ...  
Setting up ros-melodic-moveit-ros-occupancy-map-monitor (1.0.10-1bionic.20220307  
.025023) ...  
Setting up ros-melodic-chomp-motion-planner (1.0.10-1bionic.20220307.024929) ...  
Setting up ros-melodic-moveit-ros-planning (1.0.10-1bionic.20220307.025441) ...  
Setting up ros-melodic-moveit-planners-chomp (1.0.10-1bionic.20220307.034009) ..  
.  
Setting up ros-melodic-moveit-planners-ompl (1.0.10-1bionic.20220307.031306) ...  
Setting up ros-melodic-moveit-planners (1.0.10-1bionic.20220307.034404) ...  
Setting up ros-melodic-moveit-kinematics (1.0.10-1bionic.20220307.031020) ...  
Setting up ros-melodic-moveit-ros-move-group (1.0.10-1bionic.20220307.031602) ..  
.  
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...  
Processing triggers for libc-bin (2.27-3ubuntu1.5) ...  
yangmelodic@yangmelodic-ThinkPad-T450:~$
```

2.2 Sawyer 机器人安装相关依赖

1) ros-melodic-effort-controllers

```
sudo apt-get install ros-melodic-effort-controllers
```



```

yangmelodic@yangmelodic-ThinkPad-T450:~$ sudo apt-get install ros-melodic-effort-controllers
[sudo] password for yangmelodic:
Reading package lists... Done
Building dependency tree
Reading state information... Done
ros-melodic-effort-controllers is already the newest version (0.17.2-1bionic.20220222.191045).
The following packages were automatically installed and are no longer required:
 fonts-liberation2 fonts-opensymbol gstreamer1.0-gtk3 libabw-0.1-1
 libcdr-0.1-1 libclucene-contribs1v5 libclucene-core1v5 libcmis-0.5-5v5
 libcolamd2 libe-book-0.1-1 libeat0 libepubgen-0.1-1 libetonyek-0.1-1
 libexttextcat-2.0-0 libexttextcat-data libfreehand-0.1-1 libgpgmepp6
 liblangtag-common liblangtag1 libmhash2 libmspub-0.1-1 libmwaw-0.3-3
 libmythes-1.2-0 libneon27-gnutls libodfgen-0.1-1 liborcus-0.13-0
 libpagemaker-0.0-0 libraptor2-0 librasqal3 librdf0 librevenge-0.0-0
 libsuitesparseconfig5 libvisio-0.1-1 libwpd-0.10-10 libwpg-0.3-3
 libwps-0.4-4 libxmlsec1 libxmlsec1-nss libyajl2 lp-solve uno-libs3 ure
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
yangmelodic@yangmelodic-ThinkPad-T450:~$

```

2) 安装 ROS 相关依赖

```

sudo apt-get install git-core python-argparse python-wstool python-vcstools python-rosdep
ros-melodic-control-msgs ros-melodic-joystick-drivers ros-melodic-xacro ros-melodic-tf2-ros
ros-melodic-rviz ros-melodic-cv-bridge ros-melodic-actionlib ros-melodic-actionlib-msgs
ros-melodic-dynamic-reconfigure ros-melodic-trajectory-msgs ros-melodic-rospy-message-converter

```

```

yangmelodic@yangmelodic-ThinkPad-T450:~$ sudo apt-get install git-core python-argparse
python-wstool python-vcstools python-rosdep ros-melodic-control-msgs ros-melodic-joystick-drivers
ros-melodic-xacro ros-melodic-tf2-ros ros-melodic-rviz ros-melodic-cv-bridge ros-melodic-actionlib
ros-melodic-actionlib-msgs ros-melodic-dynamic-reconfigure ros-melodic-trajectory-msgs ros-melodic-rospy-message-converter
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'git' instead of 'git-core'
Note, selecting 'libpython2.7-stdlib' instead of 'python-argparse'
git is already the newest version (1:2.17.1-1ubuntu0.9).
libpython2.7-stdlib is already the newest version (2.7.17-1~18.04ubuntu1.7).
python-rosdep is already the newest version (0.21.0-1).
python-vcstools is already the newest version (0.1.42-1).
python-wstool is already the newest version (0.1.17-1).
ros-melodic-actionlib is already the newest version (1.12.1-1bionic.20220127.152851).
ros-melodic-actionlib set to manually installed.
ros-melodic-actionlib-msgs is already the newest version (1.12.8-1bionic.20210505.010611).
Need to get 30.8 kB of archives.
After this operation, 290 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://mirrors.tuna.tsinghua.edu.cn/ros/ubuntu bionic/main amd64 ros-melodic-rospy-message-converter amd64 0.5.7-1bionic.20220127.145542 [30.8 kB]
Fetched 30.8 kB in 0s (67.7 kB/s)
Selecting previously unselected package ros-melodic-rospy-message-converter.
(Reading database ... 271835 files and directories currently installed.)
Preparing to unpack .../ros-melodic-rospy-message-converter_0.5.7-1bionic.20220127.145542_amd64.deb ...
Unpacking ros-melodic-rospy-message-converter (0.5.7-1bionic.20220127.145542) ..
Setting up ros-melodic-rospy-message-converter (0.5.7-1bionic.20220127.145542) ..
yangmelodic@yangmelodic-ThinkPad-T450:~$

```


3) 安装 moveit

```
sudo apt-get install ros-melodic-moveit
```

```
yangmelodic@yangmelodic-ThinkPad-T450:~$ sudo apt-get install ros-melodic-moveit
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
 fonts-liberation2 fonts-opensymbol gstreamer1.0-gtk3 libabw-0.1-1
 libcdr-0.1-1 libclucene-contribs1v5 libclucene-core1v5 libcmis-0.5-5v5
 libcolamd2 libe-book-0.1-1 libeot0 libepubgen-0.1-1 libetonyek-0.1-1
 libexttextcat-2.0-0 libexttextcat-data libfreehand-0.1-1 libgpgmepp6
 liblangtag-common liblangtag1 libmhash2 libmispub-0.1-1 libmwaw-0.3-3
 libmythes-1.2-0 libneon27-gnutls libodfgen-0.1-1 liborcus-0.13-0
 libpagemaker-0.0-0 libraptor2-0 librasqal3 librdf0 librevenge-0.0-0
 libsuitesparseconfig5 libvisio-0.1-1 libwpd-0.10-10 libwpg-0.3-3
 libwps-0.4-4 libxmlsec1 libxmlsec1-nss libyajl2 lp-solve uno-libs3 ure
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
 libglew-dev libglew2.0 libomp-dev libomp5 python-pyassimp
 ros-melodic-eigenpy ros-melodic-moveit-commander
 ros-melodic-moveit-fake-controller-manager ros-melodic-moveit-plugins
 ros-melodic-moveit-ros ros-melodic-moveit-ros-benchmarks
 ros-melodic-moveit-ros-control-interface ros-melodic-moveit-ros-manipulation
 ros-melodic-moveit-ros-perception ros-melodic-moveit-ros-planning-interface
 ros-melodic-moveit-ros-robot-interaction
Setting up libglew-dev:amd64 (2.0.0-5) ...
Setting up ros-melodic-moveit-ros-warehouse (1.0.10-1bionic.20220307.031036) ...
Setting up ros-melodic-moveit-ros-perception (1.0.10-1bionic.20220307.031125) ..
.
Setting up ros-melodic-moveit-ros-benchmarks (1.0.10-1bionic.20220307.031540) ..
.
Setting up ros-melodic-moveit-ros-planning-interface (1.0.10-1bionic.20220307.03
2919) ...
Setting up ros-melodic-moveit-plugins (1.0.10-1bionic.20220307.031354) ...
Setting up ros-melodic-moveit-commander (1.0.10-1bionic.20220307.033853) ...
Setting up ros-melodic-moveit-ros-visualization (1.0.10-1bionic.20220307.034846)
...
Setting up ros-melodic-moveit-ros (1.0.10-1bionic.20220307.040046) ...
Setting up ros-melodic-moveit-setup-assistant (1.0.10-1bionic.20220307.040046) .
..
Setting up ros-melodic-moveit (1.0.10-1bionic.20220307.040954) ...
Processing triggers for libc-bin (2.27-3ubuntu1.5) ...
yangmelodic@yangmelodic-ThinkPad-T450:~$
```

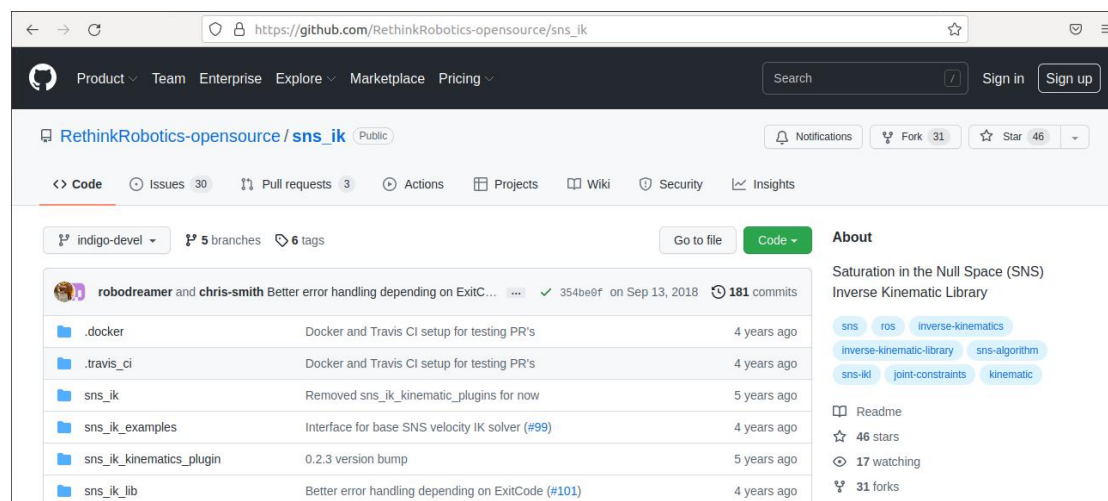
4) 安装与 ROS 工具配套使用相关依赖

```
sudo apt-get install gazebo9 ros-melodic-qt-build ros-melodic-gazebo-ros-control
ros-melodic-gazebo-ros-pkgs ros-melodic-ros-control ros-melodic-control-toolbox
ros-melodic-realtime-tools ros-melodic-ros-controllers ros-melodic-xacro python-wstool
ros-melodic-tf-conversions ros-melodic-kdl-parser
```

```
yangmelodic@yangmelodic-ThinkPad-T450:~$ sudo apt-get install gazebo9 ros-melodic-qt-build ros-melodic-gazebo-ros-control ros-melodic-gazebo-ros-pkgs ros-melodic-ros-control ros-melodic-control-toolbox ros-melodic-realtime-tools ros-melodic-ros-controllers ros-melodic-xacro python-wstool ros-melodic-tf-conversions ros-melodic-kdl-parser
Reading package lists... Done
Building dependency tree
Reading state information... Done
gazebo9 is already the newest version (9.0.0+dfsg5-3ubuntu1+ppa2).
python-wstool is already the newest version (0.1.17-1).
ros-melodic-control-toolbox is already the newest version (1.18.2-1bionic.20220222.183452).
ros-melodic-gazebo-ros-control is already the newest version (2.8.7-1bionic.20220222.191054).
ros-melodic-gazebo-ros-pkgs is already the newest version (2.8.7-1bionic.2022022.192303).
ros-melodic-kdl-parser is already the newest version (1.13.1-0bionic.20220127.150852).
ros-melodic-qt-build is already the newest version (0.2.10-1bionic.20200801.023211).
ros-melodic-realtime-tools is already the newest version (1.15.1-1bionic.20220127.153347).
```

5) sns_ik (manual install)

https://github.com/RethinkRobotics-opensource/sns_ik.git

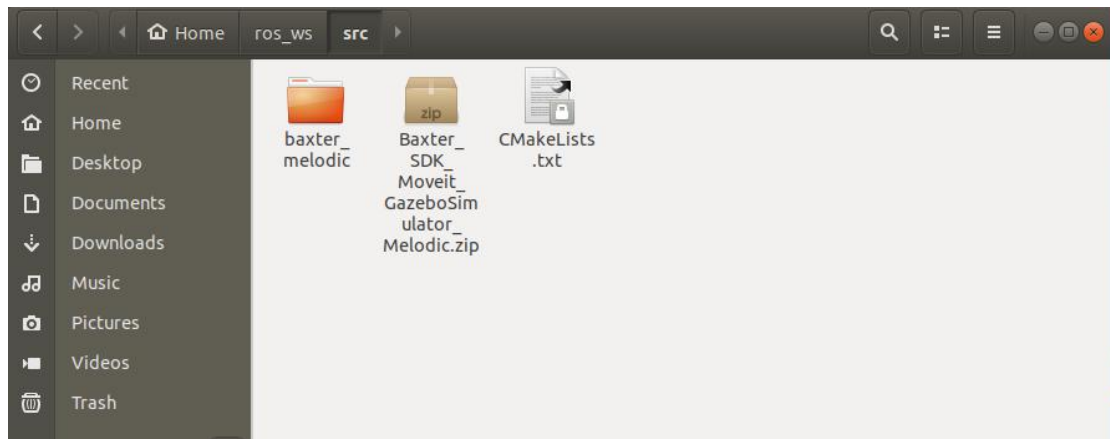


三、下载 Baxter SDK 或 Sawyer SDK 软件包并安装

3.1 下载

待定

3.2 解压软件包到 ros_ws 工作空间 src 目录



3.3 catkin_make 编译

```
yangmelodic@yangmelodic-ThinkPad-T450: ~/ros_ws
File Edit View Search Terminal Help
catkin_init_workspace      catkin_test_results
catkin_make                catkin_topological_order
yangmelodic@yangmelodic-ThinkPad-T450:~/ros_ws$ catkin_make
Base path: /home/yangmelodic/ros_ws
Source space: /home/yangmelodic/ros_ws/src
Build space: /home/yangmelodic/ros_ws/build
Devel space: /home/yangmelodic/ros_ws/devel
Install space: /home/yangmelodic/ros_ws/install
####
#### Running command: "make cmake_check_build_system" in "/home/yangmelodic/ros_ws/build"
####
-- Using CATKIN_DEVEL_PREFIX: /home/yangmelodic/ros_ws/devel
-- Using CMAKE_PREFIX_PATH: /opt/ros/melodic
-- This workspace overlays: /opt/ros/melodic
-- Found PythonInterp: /usr/bin/python2 (found suitable version "2.7.17", minimum required is "2")
-- Using PYTHON_EXECUTABLE: /usr/bin/python2
-- Using Debian Python package layout
-- Using empy: /usr/bin/empy
-- Using CATKIN_ENABLE_TESTING: ON
-- Call enable_testing()
-- Using CATKIN_TEST_RESULTS_DIR: /home/yangmelodic/ros_ws/build/test_results
-- Found gtest sources under '/usr/src/gtest': gtests will be built
```

```
yangmelodic@yangmelodic-ThinkPad-T450: ~/ros_ws
File Edit View Search Terminal Help
MakeFiles/baxter_emulator.dir/src/baxter_emulator.cpp.o
[ 95%] Building CXX object baxter_melodic/baxter_simulator/baxter_sim_io/CMakeFiles/baxter_sim_io.dir/include/baxter_sim_io/moc_qnode.cpp.o
[ 95%] Building CXX object baxter_melodic/baxter_simulator/baxter_sim_controllers/CMakeFiles/baxter_sim_controllers.dir/src/baxter_effort_controller.cpp.o
[ 95%] Building CXX object baxter_melodic/baxter_simulator/baxter_sim_io/CMakeFiles/baxter_sim_io.dir/baxter_sim_io_autogen/mocs_compilation.cpp.o
[ 96%] Linking CXX executable /home/yangmelodic/ros_ws/devel/lib/baxter_sim_io/baxter_sim_io
[ 96%] Built target baxter_sim_io
[ 97%] Building CXX object baxter_melodic/baxter_simulator/baxter_sim_controllers/CMakeFiles/baxter_sim_controllers.dir/src/baxter_head_controller.cpp.o
[ 98%] Linking CXX executable /home/yangmelodic/ros_ws/devel/lib/baxter_sim_kinematics/kinematics
[ 98%] Built target kinematics
[ 98%] Building CXX object baxter_melodic/baxter_simulator/baxter_sim_controllers/CMakeFiles/baxter_sim_controllers.dir/src/baxter_gripper_controller.cpp.o
[100%] Linking CXX executable /home/yangmelodic/ros_ws/devel/lib/baxter_sim_hardware/baxter_emulator
[100%] Linking CXX shared library /home/yangmelodic/ros_ws/devel/lib/libbaxter_sim_controllers.so
[100%] Built target baxter_emulator
[100%] Built target baxter_sim_controllers
yangmelodic@yangmelodic-ThinkPad-T450:~/ros_ws$
```

3.4 将 baxter.sh/intera.sh 脚本文件提取到工作空间目录

备注: Baxter---baxter.sh
Sawyer---intera.sh 本文以 baxter 为例

```
yangmelodic@yangmelodic-ThinkPad-T450:~/ros_ws$ cp /home/yangmelodic/ros_ws/src/baxter_melodic/baxter/baxter-master/baxter.sh .
yangmelodic@yangmelodic-ThinkPad-T450:~/ros_ws$ ls
baxter.sh build devel install src
yangmelodic@yangmelodic-ThinkPad-T450:~/ros_ws$
```

四、连接

4.1 修改 baxter.sh/intera.sh 脚本文件里的设备信息

```
#-----#
#           USER CONFIGURABLE ROS ENVIRONMENT VARIABLES           #
#-----#
# Note: If ROS_MASTER_URI, ROS_IP, or ROS_HOSTNAME environment variables were
# previously set (typically in your .bashrc or .bash_profile), those settings
# will be overwritten by any variables set here.

# Specify Baxter's hostname
baxter_hostname="011512p0025.local"

# Set *Either* your computers ip address or hostname. Please note if using
# your_hostname that this must be resolvable to Baxter.
#your_ip="192.168.XXX.XXX"
your_hostname="yangmelodic-ThinkPad-T450.local"

# Specify ROS distribution (e.g. indigo, hydro, etc.)
ros_version="melodic"
#-----#
```


4.2 运行 baxter.sh/intera.sh 脚本脚本文件并使能机器人

```
[baxter - http://011512p0025.local:11311] yangmelodic@yangmelodic-ThinkPad-T450:
~/ros_ws$ . baxter.sh
[baxter - http://011512p0025.local:11311] yangmelodic@yangmelodic-ThinkPad-T450:
~/ros_ws$ rosrun baxter_tools enable_robot.py -e
[INFO] [1649407755.144870]: Robot Enabled
[baxter - http://011512p0025.local:11311] yangmelodic@yangmelodic-ThinkPad-T450:
~/ros_ws$
```

五、调用机器人官方案例进行测试

```
[baxter - http://011512p0025.local:11311] yangmelodic@yangmelodic-ThinkPad-T450:
~/ros_ws$ rosrun baxter_examples joint_position_keyboard.py
Initializing node...
Getting robot state...
Enabling robot...
[INFO] [1649408850.048293]: Robot Enabled
Controlling joints. Press ? for help, Esc to quit.
```