

Ubuntu 16.04 + ROS Kinetic + Baxter + Moveit!

<https://zhuanlan.zhihu.com/p/60178371>

When installing Moveit! and Baxter simulator on Ubuntu 16.04 (ROS kinetic), there will be some errors that can waste you a lot of time. Therefore, a detailed introduction is recorded here.

Steps for installation:

1 Install ROS kinetic:

In this section, the standard procedure should be followed from this link:

Note: In my case, ~/ros_ws is the ROS workspace, and all source codes are stored in the src/ sub-directory.

2 Do not use catkin_make. Use catkin build from python-catkin-tools instead:

```
apt-get install python-wstool python-catkin-tools clang-format-3.9
```

3 upgrade your software pkgs.

```
rosdep update
sudo apt-get update
sudo apt-get dist-upgrade
```

4 Download source code of Baxter SDK, Moveit! and OMPL and install the dependencies

```
# source code of Moveit!
cd ~/ros_ws
wstool init src
wstool merge -t src https://raw.githubusercontent.com/ros-planning/moveit/kinetic-devel/moveit.rosinstall
wstool update -t src
gedit moveit/moveit_planners/ompl/CMakeLists.txt
```

Locate the include_directories directive and exchange the two variables \${OMPL_INCLUDE_DIRS} and \${catkin_INCLUDE_DIRS}, so that \${OMPL_INCLUDE_DIRS} is added before \${catkin_INCLUDE_DIRS}.

```
# source code of Baxter SDK and simulator
cd src
wstool merge https://raw.githubusercontent.com/RethinkRobotics/baxter_simulator/kinetic-devel/baxter_simulator.rosinstall
wstool update

NOTE: DON'T INSTALL OMPL YET
# source code of ompl
git clone -b kinetic-devel https://github.com/ompl/ompl.git
# for ROS build
cd ompl
wget https://raw.githubusercontent.com/ros-gbp/ompl-release/debian/kinetic/xenial/ompl/package.xml

# install dependencies
cd ~/ros_ws
rosdep install -y --from-paths src --ignore-src --rosdistro ${ROS_DISTRO}
catkin config --extend /opt/ros/${ROS_DISTRO} --cmake-args -DCMAKE_BUILD_TYPE=Release
```

In my case, **ros-kinetic-moveit-resources** is not installed automatically. It needs to be installed manually. Otherwise, an error will appear during catkin build:

```
Errors << moveit_core:make /home/zhb/ros_ws/logs/moveit_core/build.make.002.logIn file
included from
/home/zhb/ros_ws/src/moveit/moveit_core/utils/src/robot_model_test_utils.cpp:42:0:/home/zhb/r
fatal error: moveit_resources/config.h: No such file or directorycompilation terminated.make[2]:
*** [utils/CMakeFiles/moveit_test_utils.dir/src/robot_model_test_utils.cpp.o] Error 1make[1]: ***
[utils/CMakeFiles/moveit_test_utils.dir/all] Error 2make: *** [all] Error 2
```

Another error here is that c++11 is required for building of baxter_gazebo pkg. Add this line to baxter_simulator/baxter_gazebo/CMakeLists.txt

```
add_compile_options(-std=c++11)
```

5 Run catkin build and wait.

6 Install moveit_robots (baxter_moveit_config is included)

```
cd ~/ros_ws/src
git clone https://github.com/ros-planning/moveit_robots.git
catkin build
```

Other Packages

If any packages are missing use `sudo apt-get install ros-kinetic-packageName`

Examples: no moveit_python

`sudo apt-get install ros-kinetic-moveit-python`

Examples: no rospy_message_converter

`sudo apt-get install ros-kinetic-rospy-message-converter`

Install OMPL

```
git clone https://github.com/ompl/ompl
cd ompl
```

wget https://raw.githubusercontent.com/ros-gbp/ompl_release/debian/kinetic/xenial/ompl/package.xml

catkin build or catkin_make