Link for GITHUB

<https://github.com/Natsuw/Reconstruction-with-a-camera-based-for-static-manipulator.git>

This repository demonstrates UR5 move around with different texture model in Gazebo and ROS, then reconstructed in colmap.

**Installation**

This project was tested in **Ubuntu 18.04** with **ROS Melodic**, **COLMAP-3.6-cuda**.

Make sure you have installed Python2.7 and some useful libraries/packages, such as Numpy, cv2, etc.in ROS.

Install ROS Melodic, Gazebo, RViz, Moveit, official universal robot.

Link for universal robot: [universal\_robots - ROS Wiki](http://wiki.ros.org/action/show/universal_robots?action=show&redirect=universal_robot)

Link for COLMAP Installation: [Installation — COLMAP 3.7 documentation](https://colmap.github.io/install.html)

**Install this repository from Source**

Firstly, set up a catkin workspace (see [this tutorials](http://wiki.ros.org/catkin/Tutorials)).

Download official universal robot to workspace, [universal\_robots - ROS Wiki](http://wiki.ros.org/action/show/universal_robots?action=show&redirect=universal_robot)

Then clone the repository 🡪 <https://github.com/Natsuw/Reconstruction-with-a-camera-based-for-static-manipulator.git> into the src/ folder. It should look like /path/to/your/catkin\_ws/…   
Make sure to source the correct setup file according to your workspace hierarchy, then use catkin\_make to compile.

Assuming your official universal robot folder is ~/catkin\_ws, you should use the following commands:

$ cd ~/catkin\_ws/src

$ git clone https://github.com/Natsuw/Reconstruction-with-a-camera-based-for-static-manipulator.git

$ cd ..

$ catkin\_make

$ source devel/setup.bash

Under catkin\_ws/src there are four folders. Two for image saver(xxx\_image\_saver)

One is the official universal\_robot (you should download this folder from official site, the link had provided above)

And another is ur5\_go\_pkg (main repository from github).

**Replace and Change Files**

***Under directory catkin\_ws/src/universal\_robot/ur\_description/urdf/***

Opefile ur5\_joint\_limited\_robot.urdf.xacro, and **make the following change to the joint limit:**

shoulder\_pan\_lower\_limit="${-2\*pi}" shoulder\_pan\_upper\_limit="${2\*pi}"

***Under directory catkin\_ws/src/ur5\_go\_pkg/src***

There are two folders which are **launch** and **worlds**, copy and paste to catkin\_ws/src/universal\_robot/ur\_gazebo

Build the code under directory catkin\_ws/

$ catkin\_make

$ source devel/setup.bash

**Run the code with ROS and Gazebo**

**For the BLOCK model**

# launch Gazebo with UR5 and block model

$ **roslaunch ur\_gazebo view\_test\_ur5.launch**

# launch Moveit

$ **roslaunch ur5\_moveit\_config ur5\_moveit\_planning\_execution.launch sim:=true**

**#** The main file for UR5 run

$ **rosrun ur5\_go\_pkg moveit\_block\_demo.py**

**#** Save image in ur5\_image\_save

$ **rosrun ur5\_go\_pkg block\_vision.py**

# Code are not using, only for testing

roslaunch ur5\_moveit\_config moveit\_rviz.launch config:=true (not using, show in moveit)

rqt\_image\_view (not using, image view)

**For the Beer model**

$ **roslaunch ur\_gazebo view\_beer\_ur5.launch**

$ **roslaunch ur5\_moveit\_config ur5\_moveit\_planning\_execution.launch sim:=true**

$ **rosrun ur5\_go\_pkg moveit\_beer.py**

$ **rosrun ur5\_go\_pkg beer\_vision.py**