1 Inserting the Kinect camera into Husky

Short description on how to modify the Gazebo files to put Sick Laser range finder or alternatively the Kinect camera. it is sufficient to modify the husky-fabrickhalle.launch file to change the robot configuration. The **urdf** and **gazebo** files in the husky kinetic devel should remain the same.

2 Tracking AR tags with ar_track_alvar package

The file **ar_tracker.launch** has been modified for the camera image topic to use sensor_msg/Pointclouds instead of sensor_msg/Image messages. The frame is /camera_frame_optical link.
Tried:

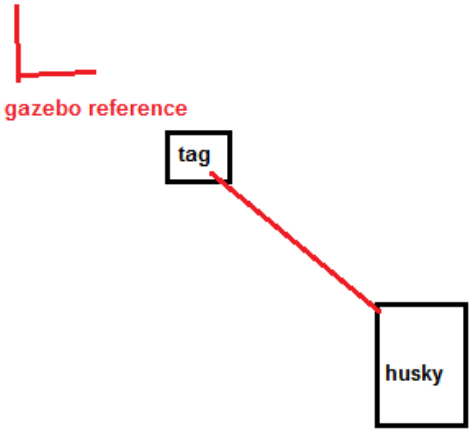
- Drive around to see if the robot could actually detect the tag.
- Increase the marker scale in the file Fabrickhalle.world to be 1 (1 meter??): **Does not solve the issue**, the **ar_tracking package** does not output the pose topic for the marker in the *ar_pose_marker* topic.
- Commenting out the **remap from** tags from the ar_tracker.launch file: not working
- Looking into the published camera topics.The packege requires a subscription to two kinds of message: sensor_msgs/CameraInfo and sensor_msgs/Image
  - /camera/depth/camera_info is of type sensor_msg/CameraInfo - not empty if rviz is launched
  - /camera/rgb/camera_info is of type sensor_msg/CameraInfo
  - /camera/depth/image_raw or rgb/imageraw is of type sensor_msgs/Image - not empty msg
  - /camera/depth/points is of type sensor_msgs/PointCloud2 - not empty
  - Same holds for above for **rgb** instead
  - /camera_image is of type sensor_msgs/PointCloud2 - **emtpy**
  - /camera_info is of type sensor_msg/CameraInfo - **empty**

3 Solved

By driving to the other side of the tag the **ar alvar** is able to create a link from the ar tag, however this is very unstable, the detection presents jumps.

4 Next steps

- Find a way to make more reliable tags in Gazebo, making models in .world files
- Put two tags and see how the Kinect is able to recognize separate tags, output separate frames. For this case we might want to use the **bundle launch file**, which is able to track poses of tag bundles.
- Now as general, what we have from the **ar_track_alvar** is the link between the camera and the tags. The relation between tags and the Gazebo reference origin is known by the **world** file, all the tags frames should be published into a topic to be visible by the system.


gazebo reference
tag
husky