Managing Coordinate Frames with ROS

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Part II

Hands-on

tf command line operations

- Create a new frame with the name “cam_base”, parent to “/openni_camera” with the following parameters:
  - Rotation: roll = 0; pitch = 0.51; yaw = 3.14159265
  - Translation: [0 0 0.1]
  - Frequency: 100 Hz
  - `Usage: rosrun tf static_transform_publisher x y z yaw pitch roll frame_id child_frame_id  period(milliseconds)`

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Publishing a static transform from the command line

```
rosrun tf static_transform_publisher 0 0 0.1
3.14159265 0.51 0 /cam_base /openni_camera  100
```

- Now, in a new window, run:

```
rosrun tf tf_echo /cam_base /openni_camera
```

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Publishing a static transform from the command line

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rosrun tf static_transform_publisher 0 0 0.1
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- Open /tf_workshop/launch/tf_frames.launch

- Uncomment the first two static transform publishers
- Run rviz: `rosrun rviz rviz`

Create a Transform Broadcaster (Python)

- Open tf_workshop/nodes/track_kin.py
- Line 17: Broadcast the end_effector pose, according to the values in x,y,z and the rotation quaternion, acquired from the topic “/armpose”, which relate to the frame “robot_base”

```
br.sendTransform(x,y,z,rot,Time,"frame1",
"frame2")
```

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Create a Transform Broadcaster (Python)

```
br.sendTransform( (x,y,z, quat, rospy.Time.now(), "end_effector", "robot_base")
```

- Run: `rosrun tf_workshop track_kin.py`

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Create a Transform Broadcaster (Python)

```
br.sendTransform( (x,y,z, quat, rospy.Time.now(), "end_effector", "robot_base")
```

- Run: `rosrun tf_workshop track_kin.py`

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Create a Transform Listener (C++)

- Open tf_workshop/src/object_tracker.cpp
- Notice there's a new frame called “object_frame” being broadcast
- Go to line 66: uncomment the three lines. Compile using:

```
rosmake tf_workshop
```

```
rosrun tf_workshop obj_tracker
```

- Is everything working well?

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Create a Transform Listener (C++)

```
  listener.waitForTransform("/object_frame", "/end_effector",
msg.header.stamp, ros::Duration(0.2));

  listener.lookupTransform("/object_frame", "/end_effector",
msg.header.stamp, transform);

  listener.transformPointCloud("/end_effector",objectpc,objectpc);
```

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