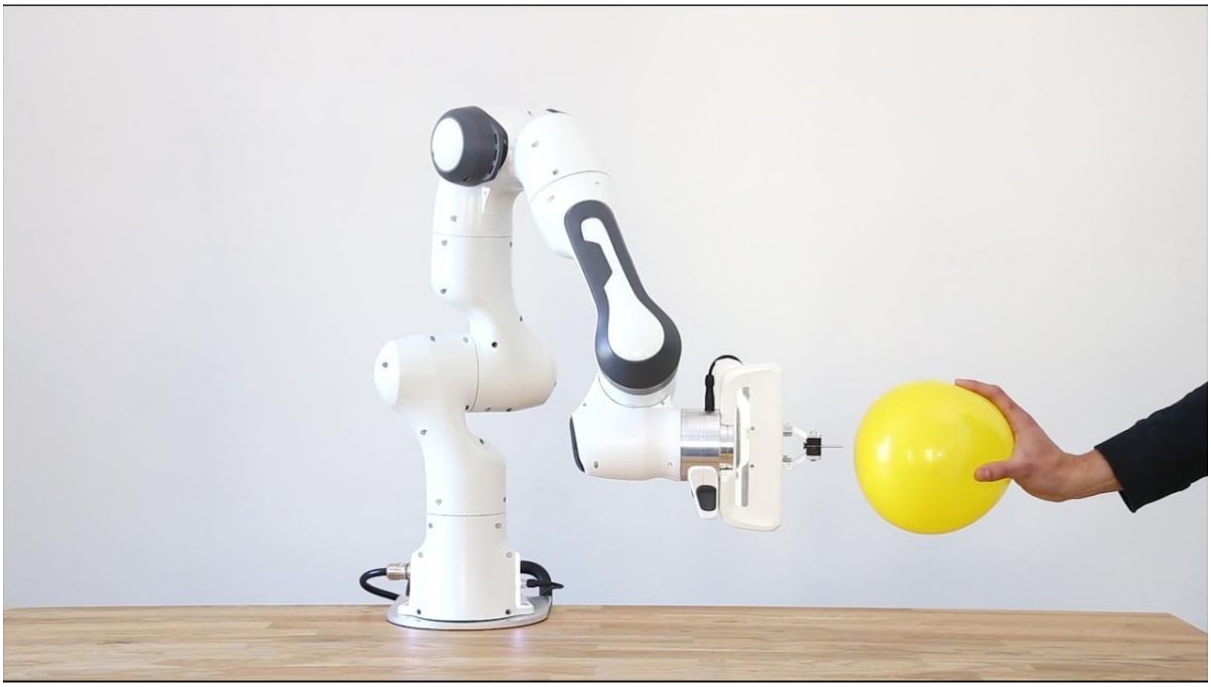
COMP0129: Robotic Sensing, Manipulation and Interaction

Sample Code

Author: Dimitrios Kanoulas



Sample Code

ROS core

Q1

Make sure that ROS is working, by typing the following commands in a terminal:

```
> roscore
> rostopic list
```

What do you see as output?

ROS Publishers and Subscribers

1. Read about ROS Publishers and Subscribers: **here**

2. Clone the REPO of the first lab (make sure that you have setup correctly bitbucket):
   ```
   > git clone https://github.com/COMP0129-S21/comp0129-s21__sample.git
   ```

3. Enter the main folder:
   ```
   > cd comp0129-s21__sample
   ```

4. Compile the code:
   ```
   > catkin build
   ```

5. If all went right, you should have successfully compiled the code. You have to source the repository **(every time you open a new terminal)**:
   ```
   > source devel/setup.bash
   ```

6. Now you are ready to run your first Talker-Listener code (in two different sourced terminals).
   ```
   > roscore
   > rosrun sample sample_talker
   > rosrun sample sample_listener
   ```

Q2

Check the topics that run in ROS:

```
    > rostopic list
```

Can you see the /chatter? If yes, print the info and see the details (subscriber, publisher, message type) and print the message data:

```
    > rostopic info /chatter
    > rostopic echo /chatter
```

What is the framerate of the published topic?

```
    > rostopic hz /chatter
```

Can you increase the framerate to 30Hz by tweaking the file sample_talker.cpp?

ROS Services

1. Read about ROS Services: here

2. Run your first Server-Client code (in two different sourced terminals).

```
> roscore
> rosrun sample sample_server
> rosrun sample sample_client 1 2
```

Q3

Did the server add the requested integers?

```
    > rostopic list
```

ROS TFs (Frames)

1. Read about ROS frames: **this**

2. Run the tf transformation code:

   ```
   > roslaunch sample sample.launch
   ```

3.
   ```
   > rostopic list
   ```

Q4

Check the transformation from /robot_frame to /world_frame, in the terminal:

```
    > rostopic list
    > rostopic echo /tf
    > rosrun tf tf_echo /world_frame /robot_frame
    > rosrun tf tf_echo /robot_frame /world_frame
```

Check the transformation from /robot_frame to /world_frame, in pdf format:

```
> rosrun  tf view_frames
> evince frames.pdf
```

Create a camera frame in the terminal and re-check the aforementioned transformations:

```
> rosrun tf static_transform_publisher 0 0 1 0 0 0 /camera_frame /robot_frame 30
```

Check the tf in RViz:

```
> rviz
```