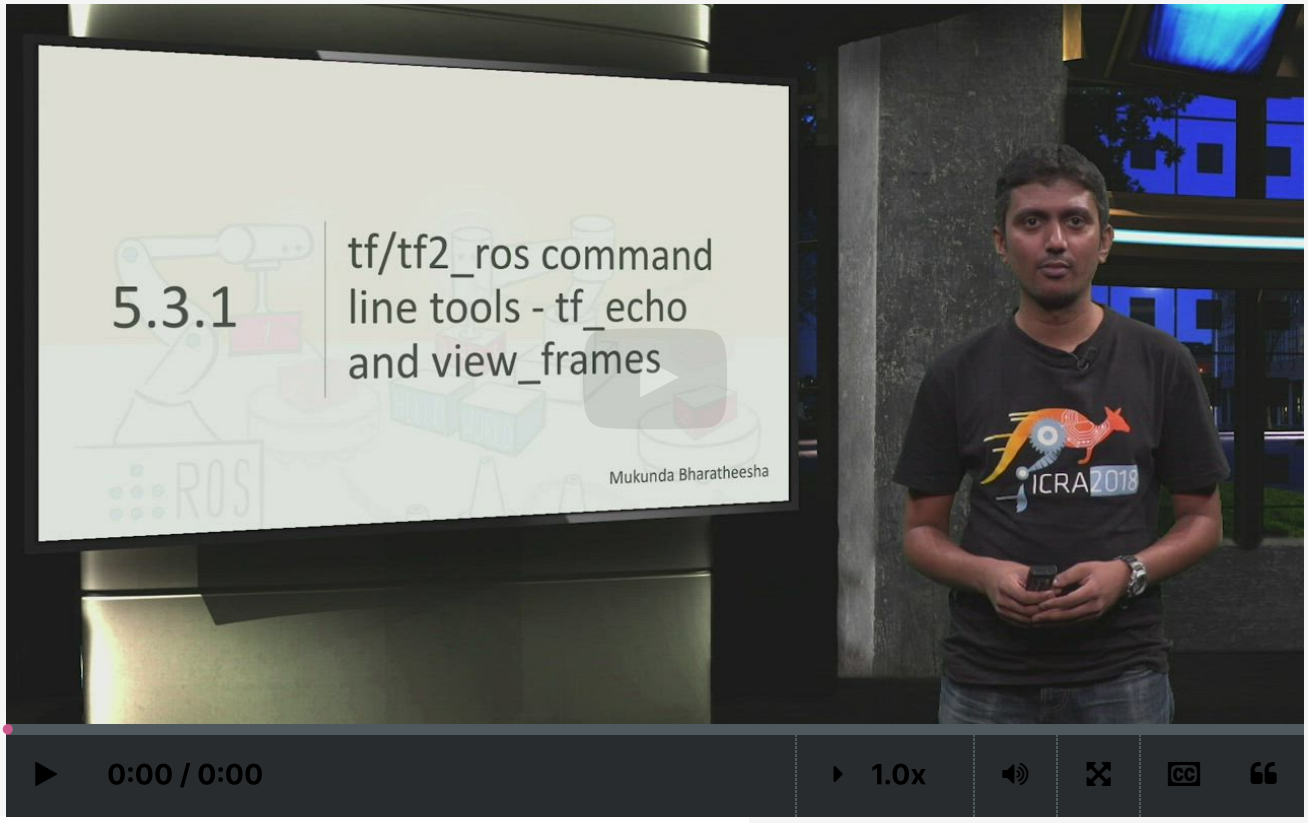
In this lecture, we will continue on the previous lecture of why we may get an error message with tf_echo. Therefore we will learn about TF and query timing.

**Important Note:**
The following command is not available in ROS Noetic:
`$ rosrun tf view_frames`
It has been replaced by this one:
`$ rosrun tf2_tools view_frames.py`

---

**ROS command line tools tf/tf2**




Video ▼ Subtitles ▼

Other ▼



---

Query timing

- Transform information is continuously updated.
- Transform information publishes on the `/tf` topic.
- No guarantee that the query and publication time is the same!
    - Query for a transform in a future will result in:
      *"Particular source or target frame" `passed to lookupTransform` argument `source_frame` does not exist*
- Errors go away once the desired frames are refreshed or become available.

---

**Using tf view_frames to generate a full tf tree**

- *view_frames* generates a pdf containing the full TF tree
- It's necessary to have the factory simulation running on a separate CCS.
- Execute tf view_frames with

```
$ rosrun tf2_tools view_frames.py
```

- A PDF called *frames.pdf* will be created **on the same folder** where we run this command.
- Open the *frames.pdf* with a pdf reader outside the CCS.
- Zoom in to inspect the tf tree in detail.

---

**Important Note:**
**The contents of the frames.pdf you will create are slightly different from the one on the video.**

The shape of the tf tree may differ, having the branches at different locations that those shown on the videos. This is because the tree is actually created everytime you run the command.

Also on the frames.pdf file you will create:

- The `robot2_base_link` on the  is directly connected to `world_interface.` It is not connected to `robot2_pedestal` as shown in the video.
- To get to the `vacuum_gripper2_suction_cup` you need to follow the `robot2_base_link` branch.

---

## Question 1

1 point possible (ungraded)

If a requested transform information between a source and a target is not available at the time of querying via tf_echo, such an information will never be available.

- ◯ True
- ◯ False

Submit

---

## Question 2

1 point possible (ungraded)

Which ROS node is publishing the TF information between robot2_wrist2_link and robot2_wrist3_link?

- ◯ /robot_state_publisher
- ◯ /tf
- ◯ /robots_state_publisher

- ◯ /joint_states_node

Submit