In this lecture, we will learn how to move our robot arms with MoveIt Commander.

Important note:
This requires the instructions for the MoveIt Setup Assistant to be completed. (Units 4.3.1 to 4.3.5)

If you haven't followed them, please go to this previous units, and pay special attention to the additional steps of <u>unit 4.3.4</u>

MoveIt Commander

| ▶ | 0:00 / 0:00 | ▶ 1.0x | 🔊 | ⤢ | CC | 66 |

| ▶▶ Video ▼ | SRT Subtitles ▼ |

| Other ▼ |
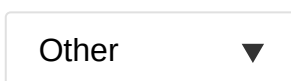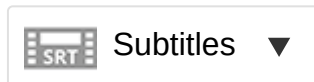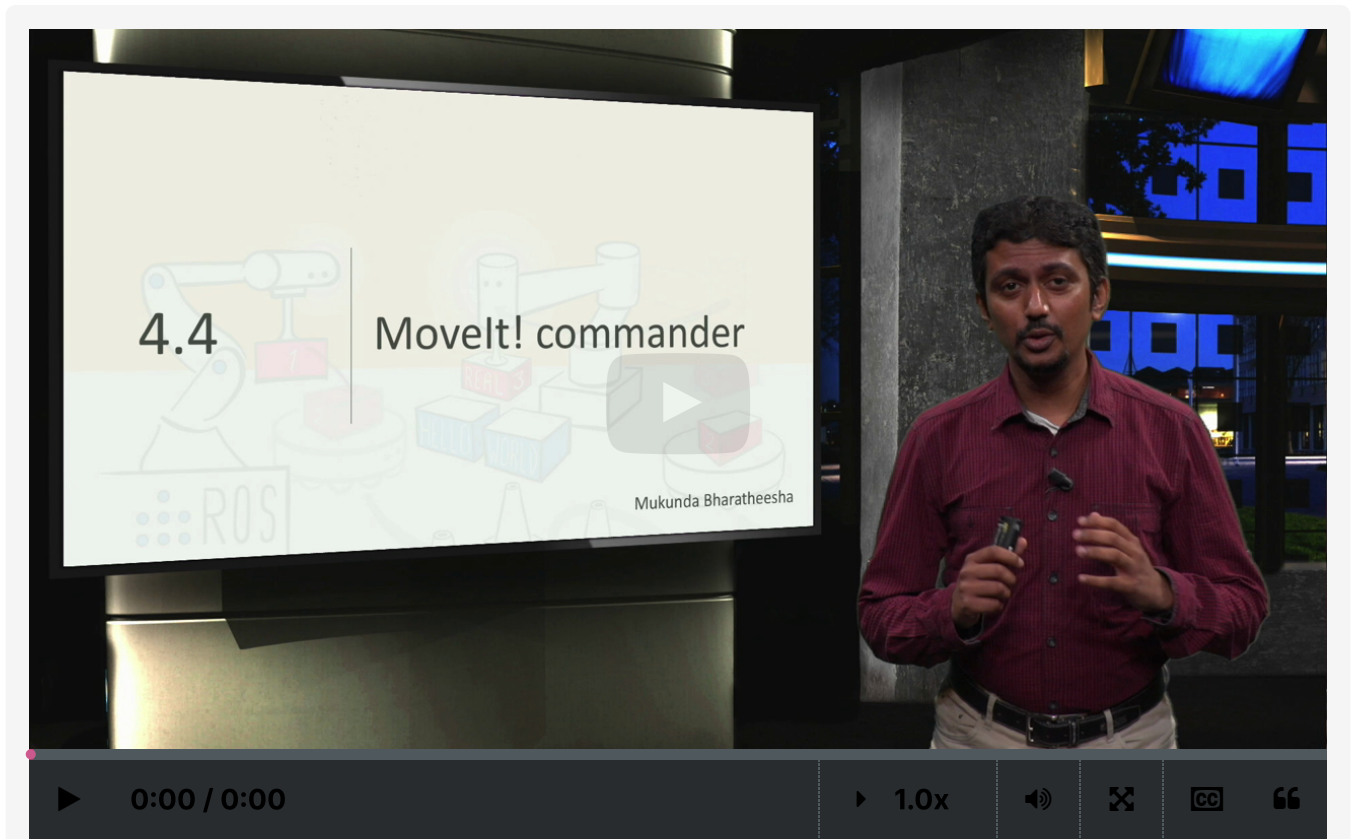
Launch MoveIt Commander:

- Start the Gazebo simulation and verify if the robot arms and the turtlebot are correctly displayed.

```
$ roslaunch hrwros_gazebo hrwros_environment.launch
```

- Start the command line tool to send motion commands to the robot.

```
$ rosrun hrwros_week4 hrwros_moveit_commander_cmdline
```

MoveIt commander commands

- List all usable commands
  ```
  > help
  ```

- Select the "group" to use
  ```
  > use <group_name>
  ```

- Plan and execute motion from stored positions **(srdf)**
  ```
  > go <named_target>
  ```

- Plan and execute linear motions
  ```
  > go <up | down | left | right | forward | backward>
  <distance_in_m>
  ```

- Get current joint state and pose
  ```
  > current
  ```

- Execute multiple commands
  ```
  > load <path_to_script_file/scrip_file_name>
  ```

Let's see the commands in action!

```
> use robot1
> go R1Up
> go down 0.2
```

With the `current` command, you can see the joint values and pose of the end effector.

```
> current
```

Let's try the load command and create the required script file.

Create a script and type commands **outside the CCS in a regular terminal.**
```
$ touch moveit_commander_test
$ gedit moveit_commander_test
```

For example, you can add the following commands in the script:

```
use robot1
go R1Up
go down 0.2
```

Then, switch back to the CCS where you started MoveIt commander and use the following command:

```
> load moveit_commander_test
```

The robot corresponding to the planning group you have used in the script should start moving now.

Question 1

1 point possible (ungraded)
It is actually not necessary to start the factory simulation before we start MoveIt commander to be able to move our robot arms with MoveIt This is because MoveIt commander can use planning groups directly with the use command.

Is the statement true or false?

○ True

○ False

Submit

Question 2

1 point possible (ungraded)
We did not specify an end effector group while we set up the configuration
files for MoveIt via the setup assistant. But, we can still see the
vacuum_gripper1_suction_cup link moving with the robot.

Why is this the case?
There is one correct answer.

- [ ] MoveIt internally knows that the end effector should move because we configured the vacuum_gripper1_suction_cup as the last link of the kinematic chain for the robot1 group.

- [ ] The vacuum_gripper1_suction_cup is attached with a series of fixed joints to the robot1_tool0 link which is connected to the rest of the robot. Therefore, whenever the robot moves, the vacuum_gripper1_suction_cup link also moves.

- [ ] MoveIt adds a new joint internally to consider the vacuum_gripper1_suction_cup link and creates an end effector group that the users cannot access.

Submit