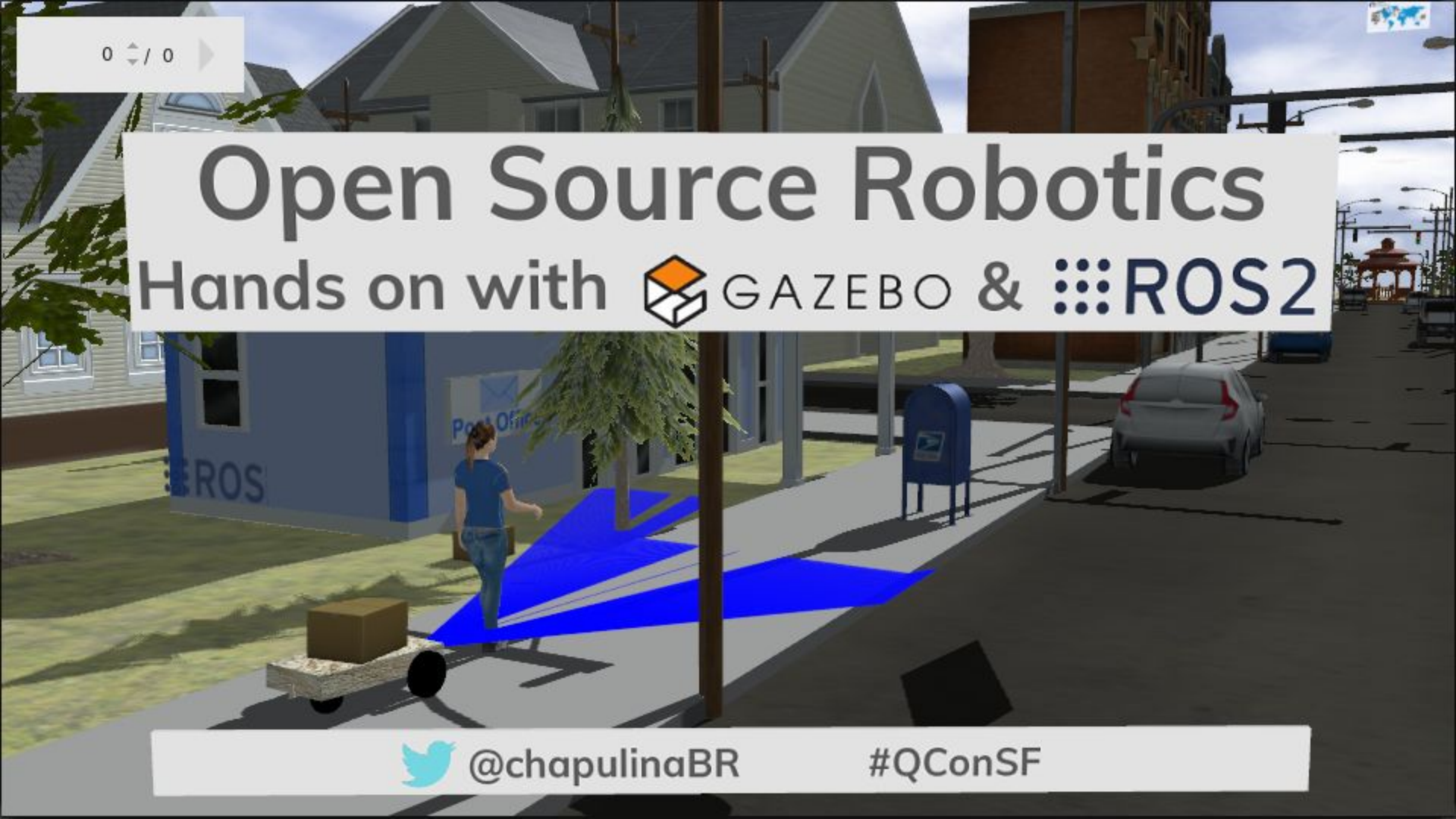
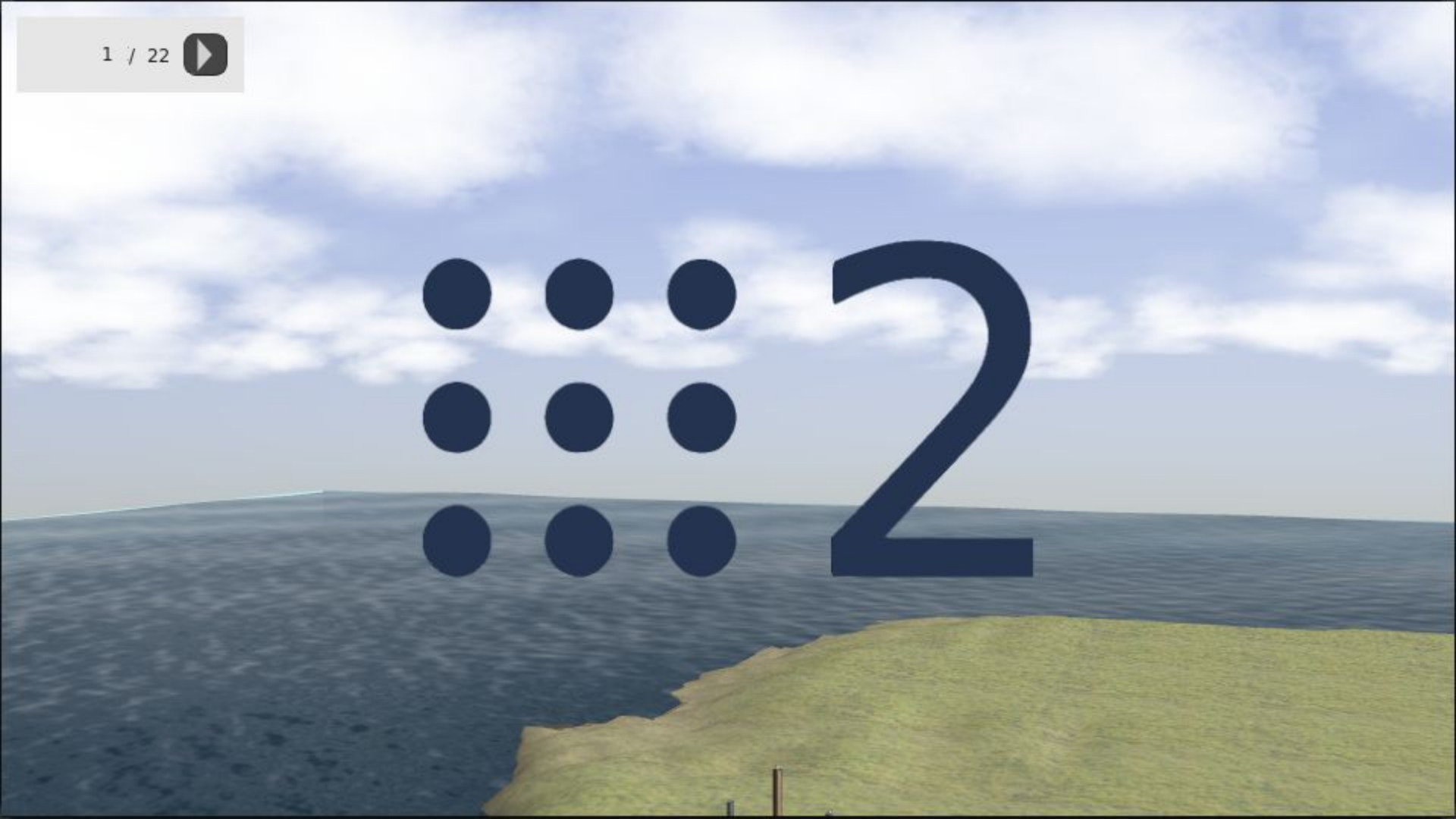

0 / 0
Open Source Robotics
Hands on with GAZEBO & ROS2
ROS
@chapulinaBR
#QConSF

0 / 22
Post Off
ROS

ROS


2

GAZEBO

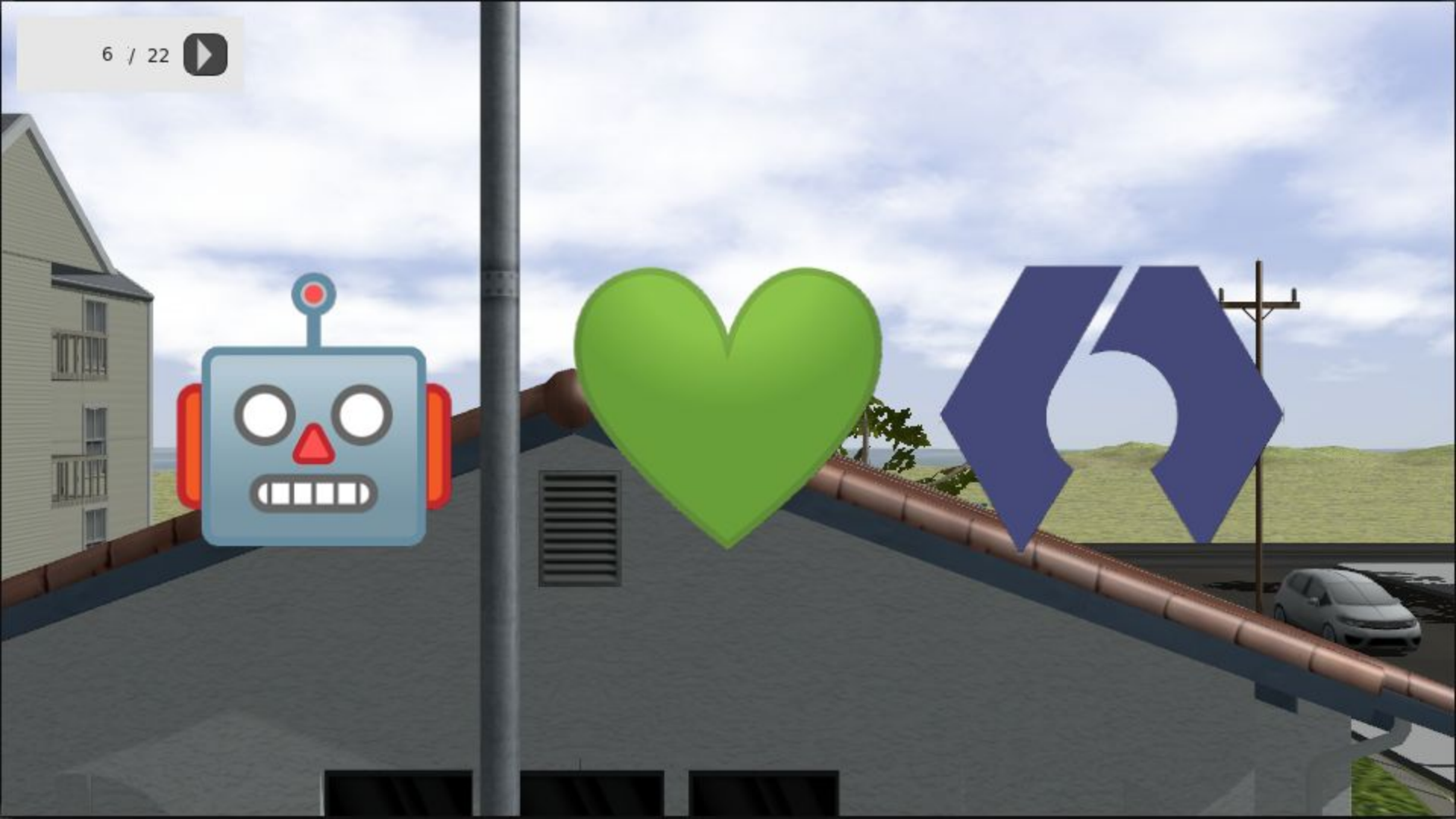
open robotics

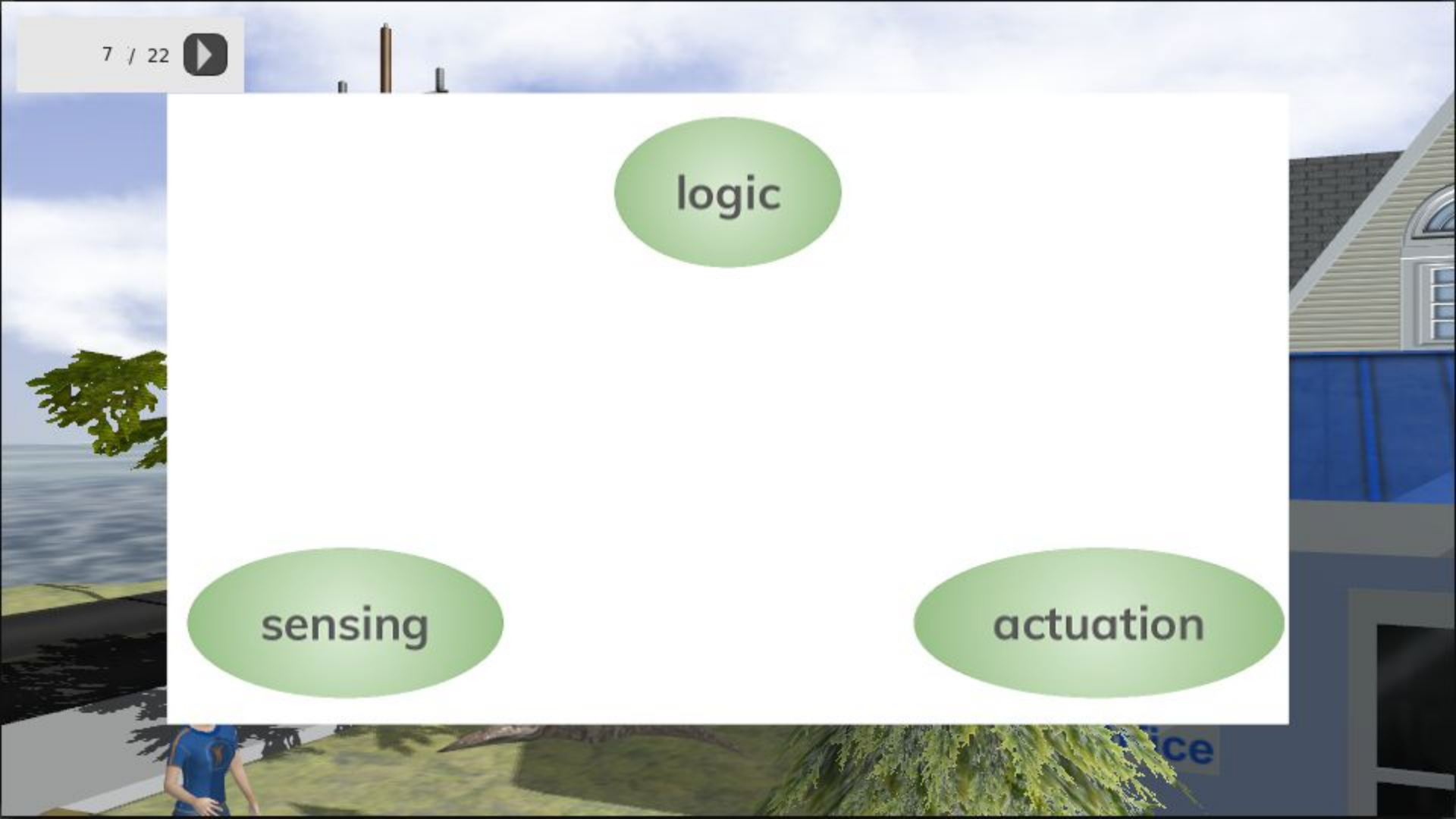
Louise Poubel

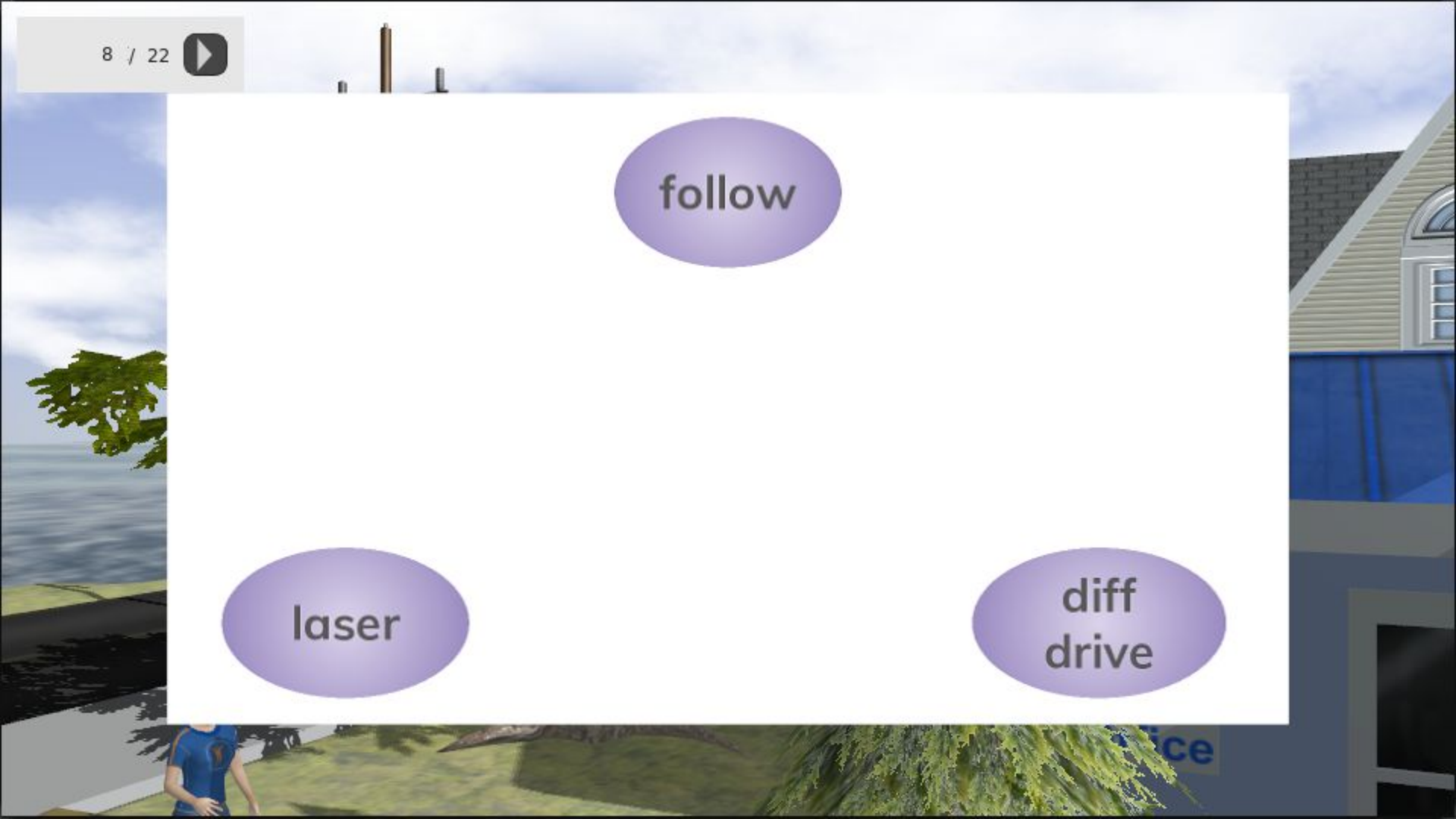
http://louise.world

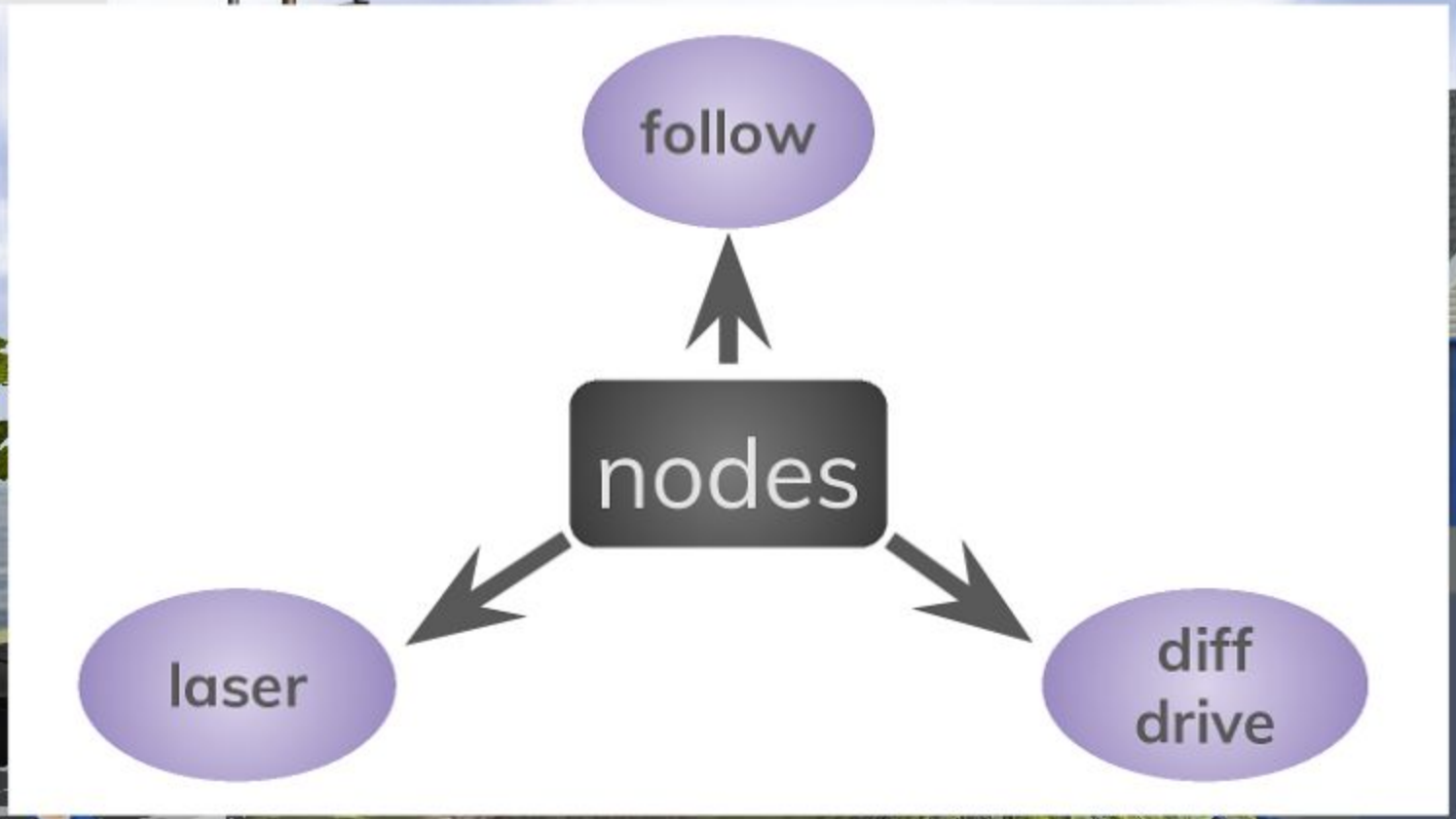
@chapulinaBR

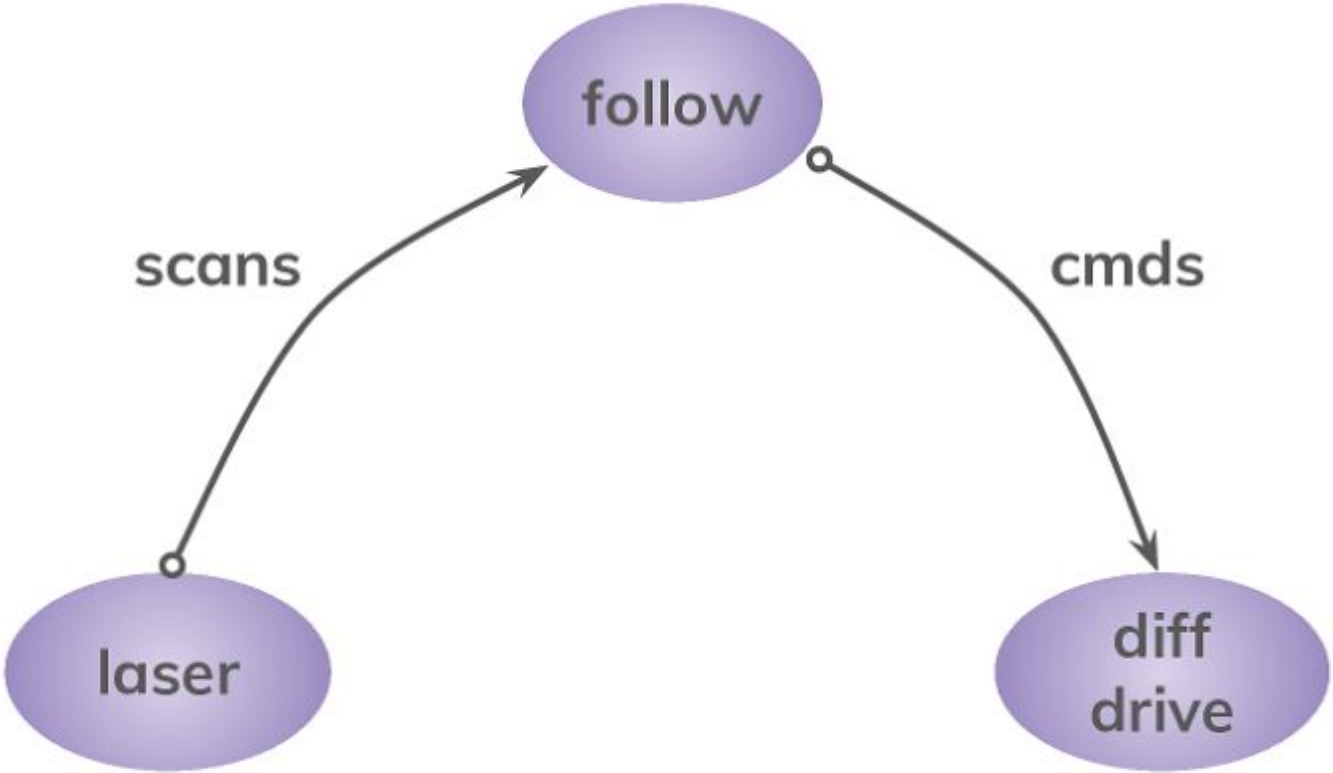
open robotics

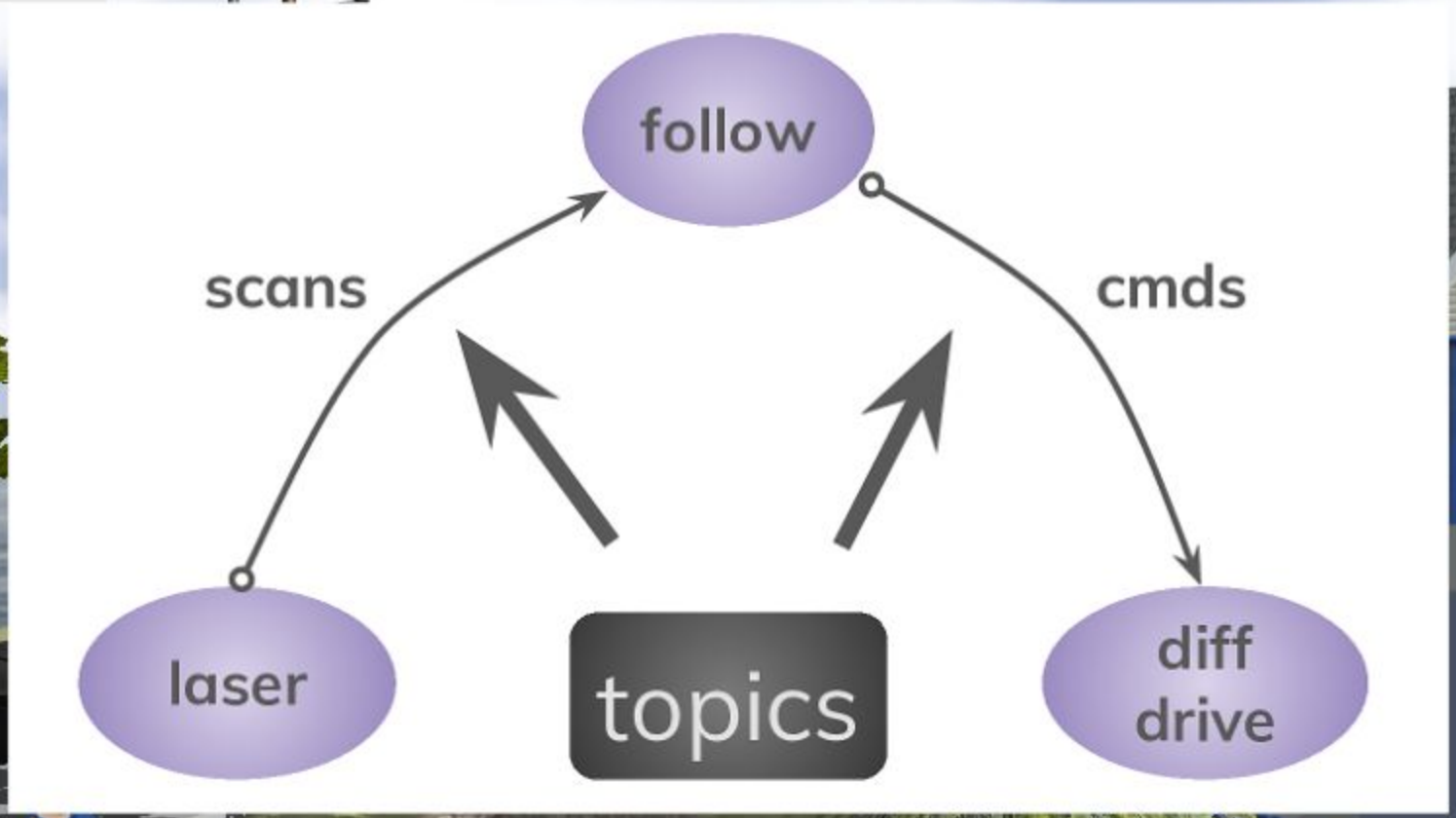


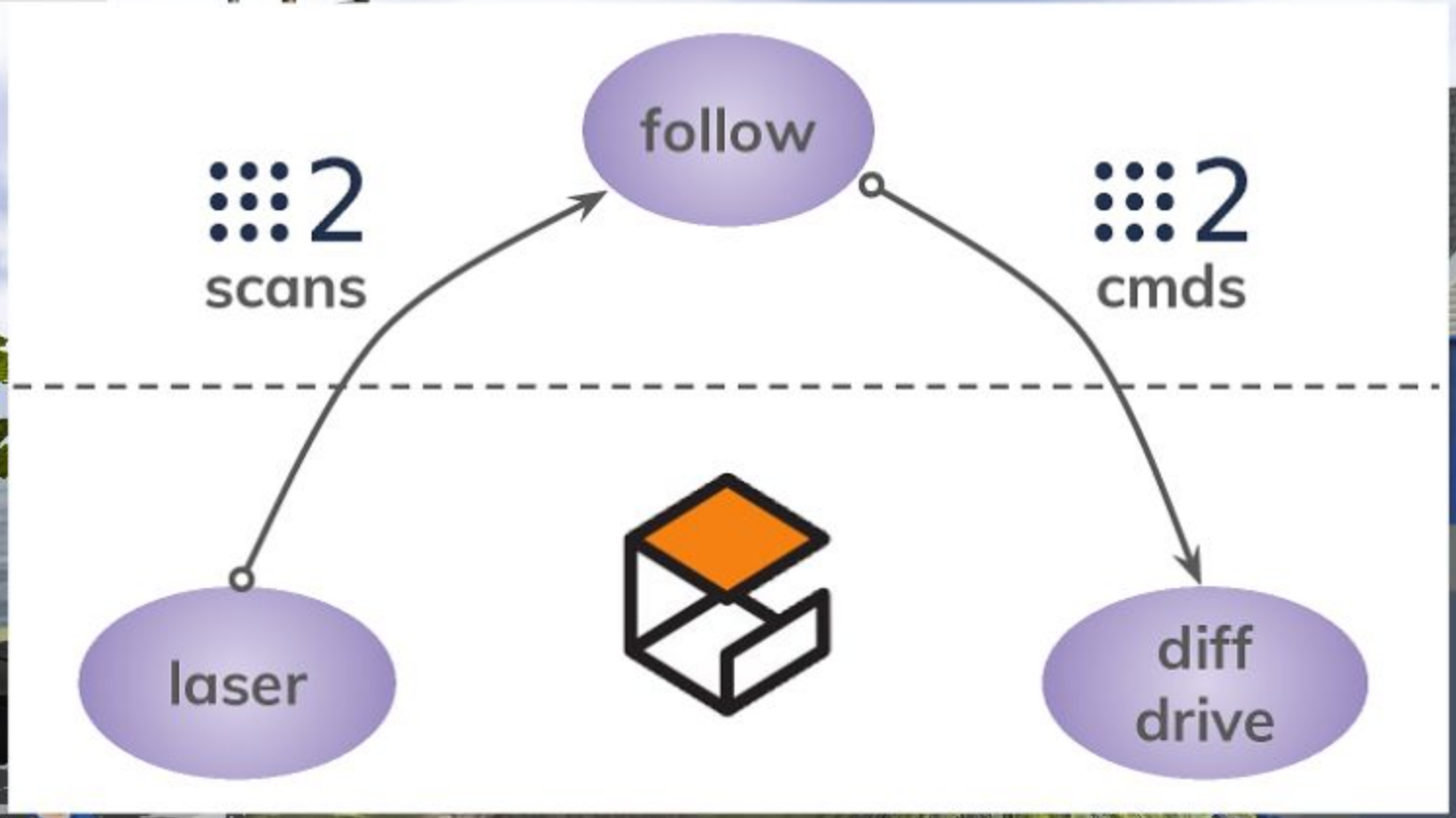

logic
sensing
actuation

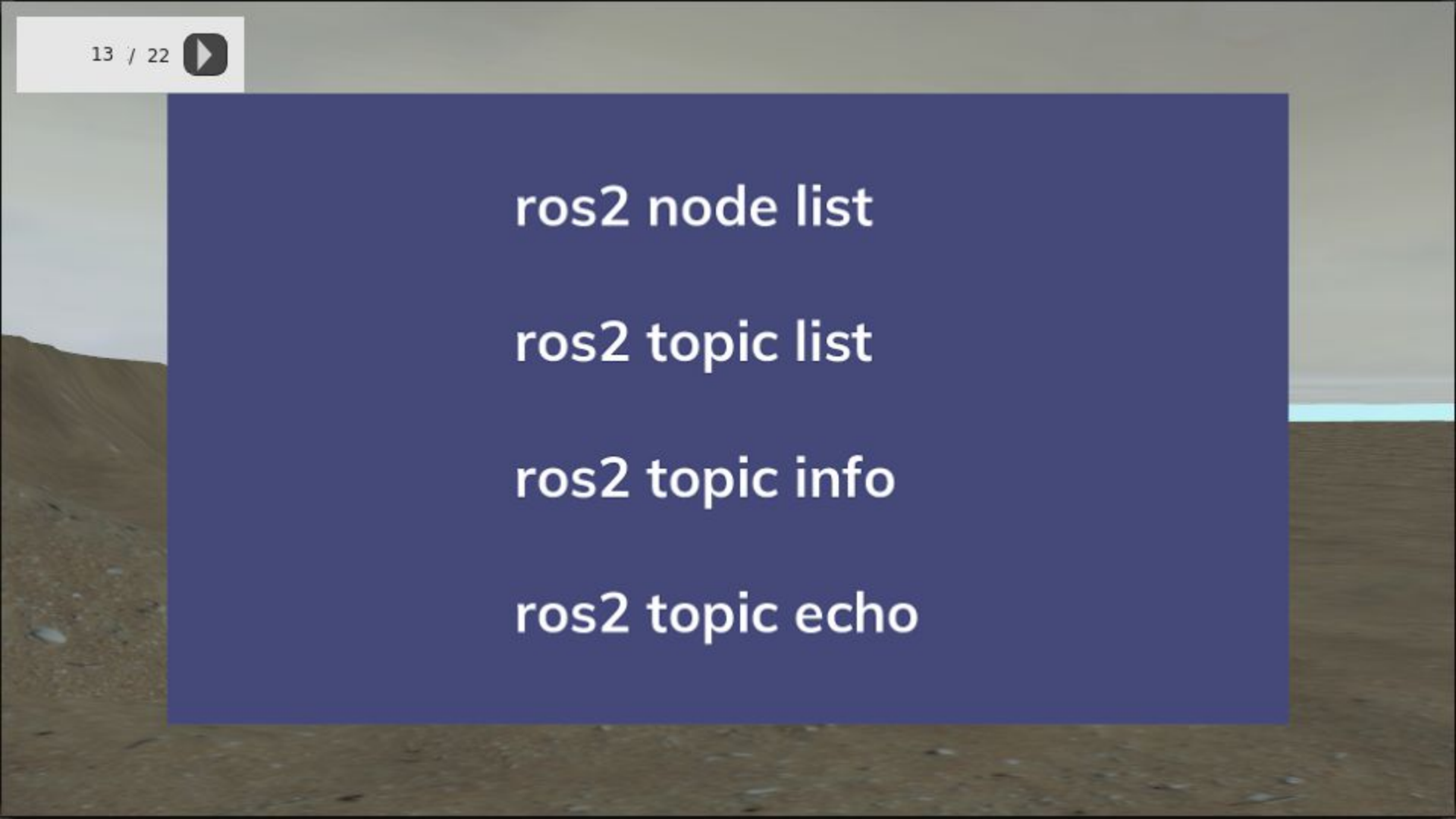

follow
laser
diff
drive

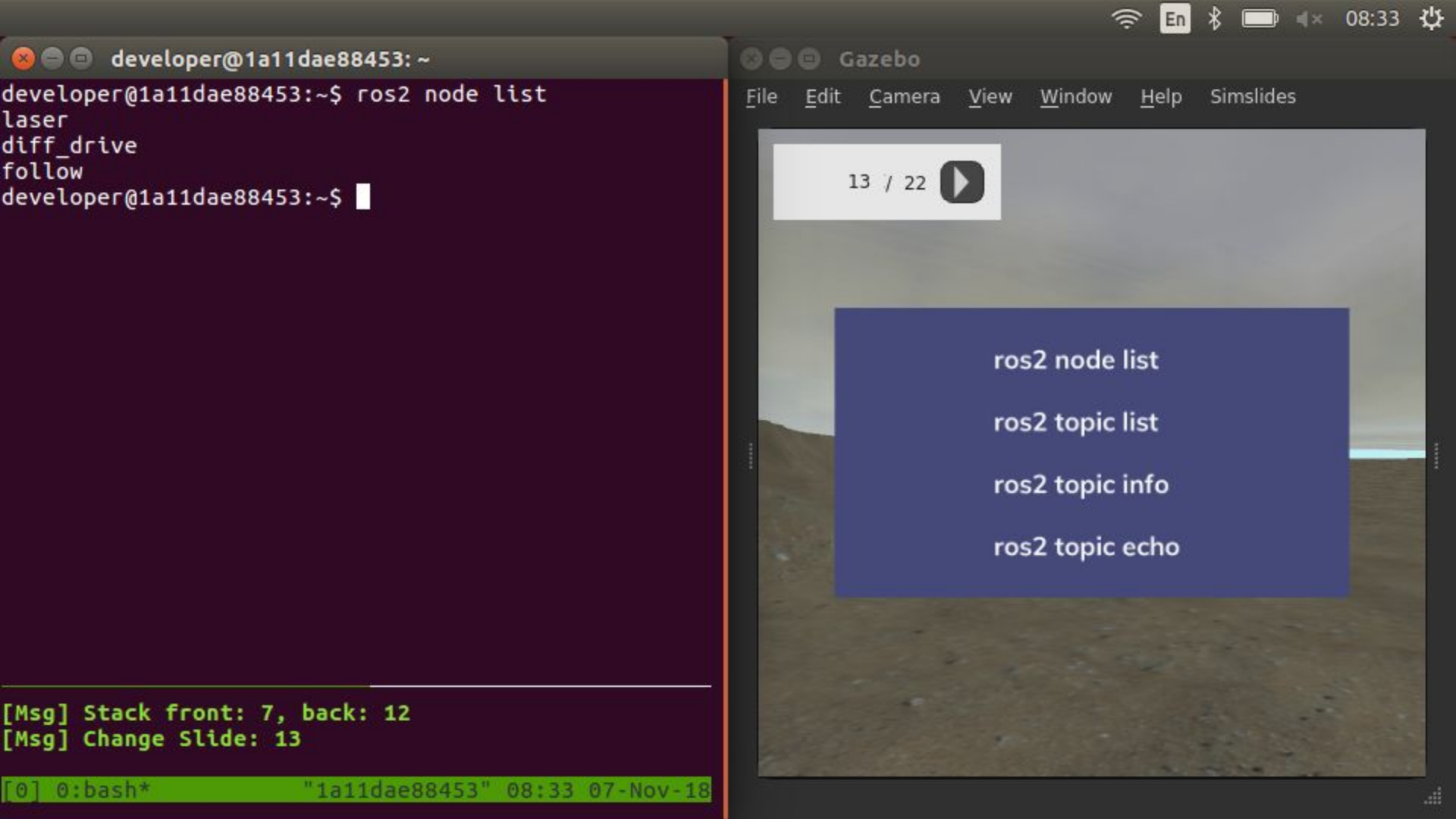

follow
nodes
laser
diff
drive

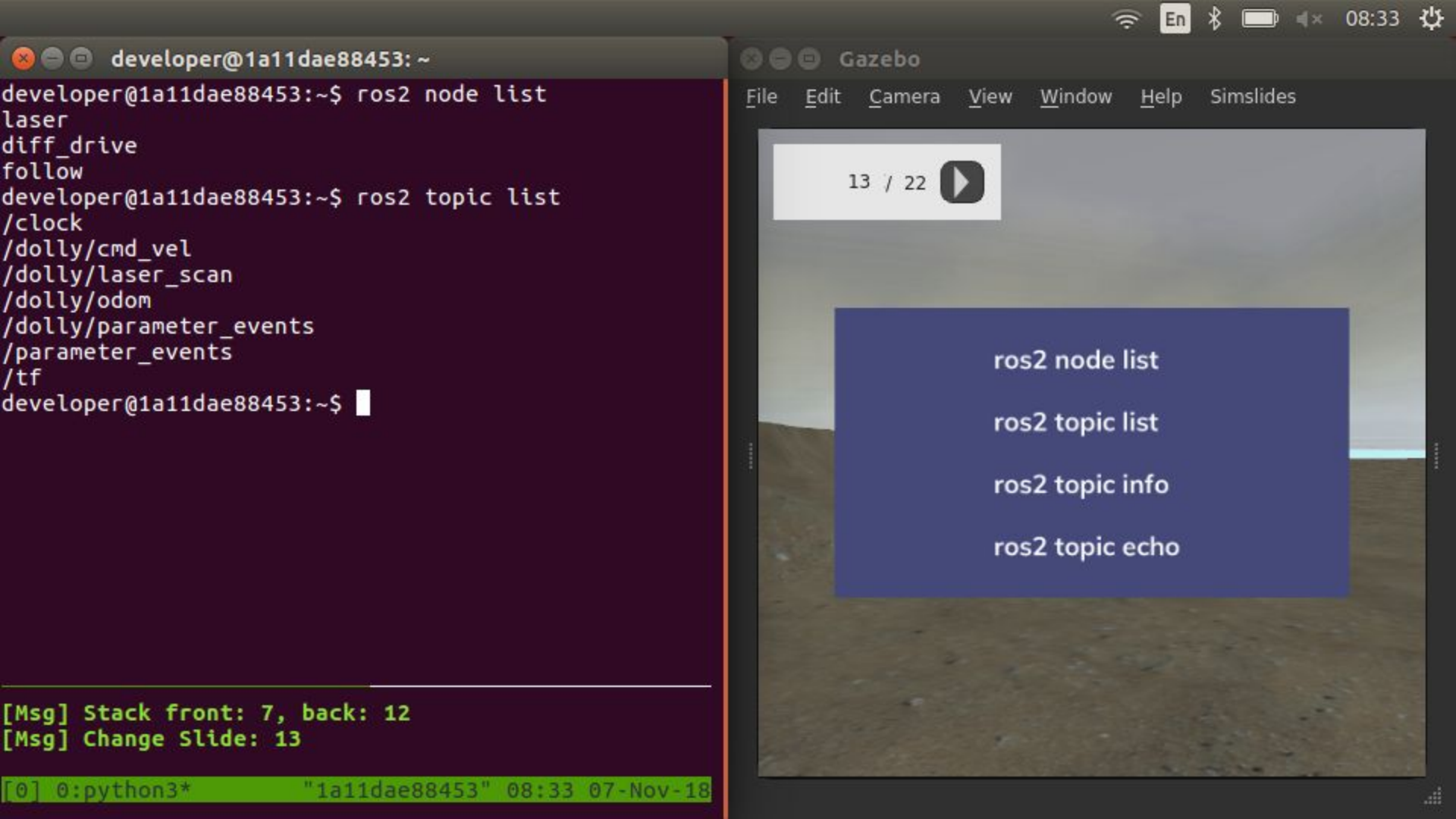

follow
scans
cmds
laser
diff
drive

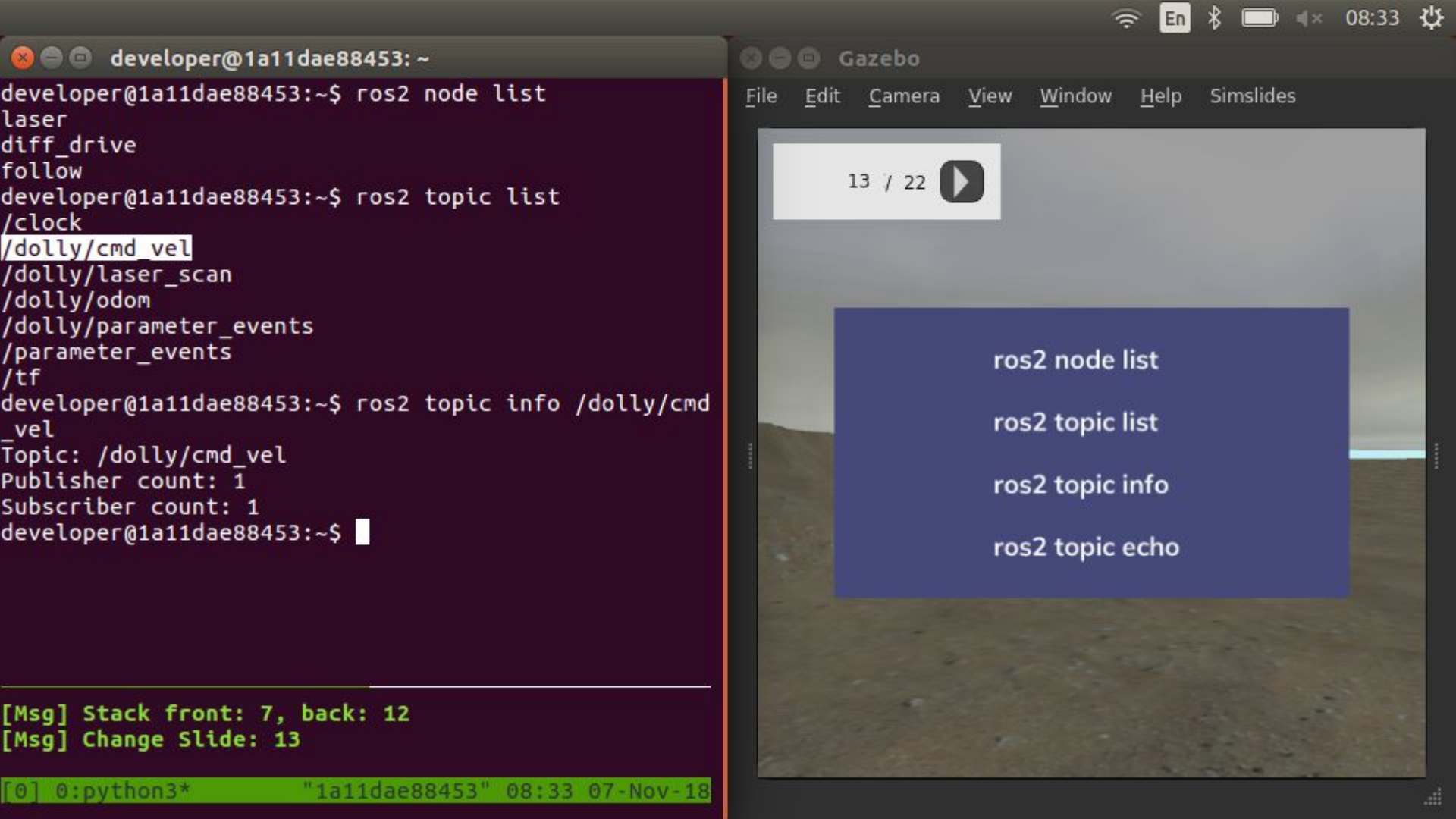

follow
scans
cmds
laser
topics
diff
drive

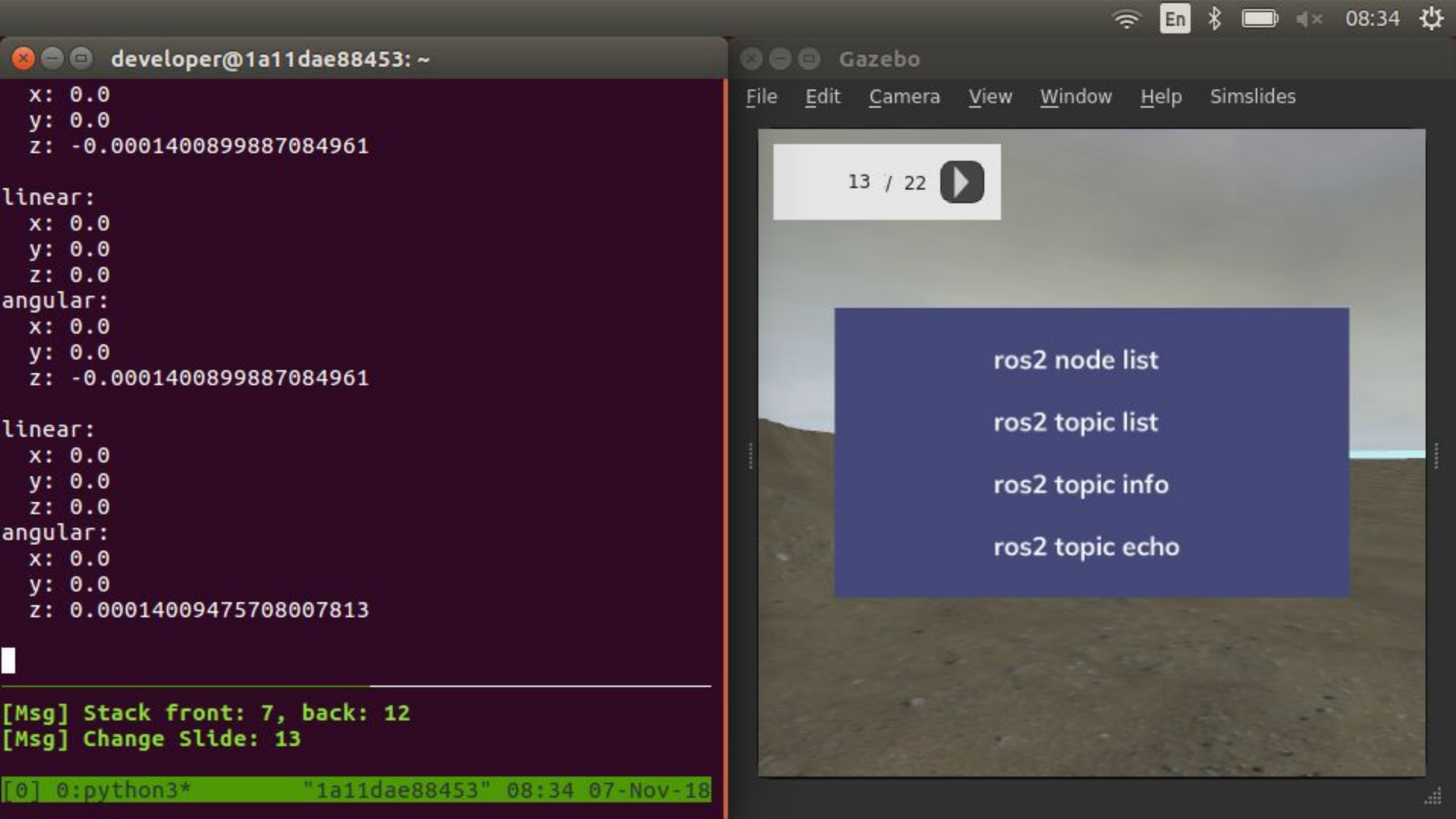

follow
2
scans
2
cmds
laser
diff
drive


ros2 node list
ros2 topic list
ros2 topic info
ros2 topic echo

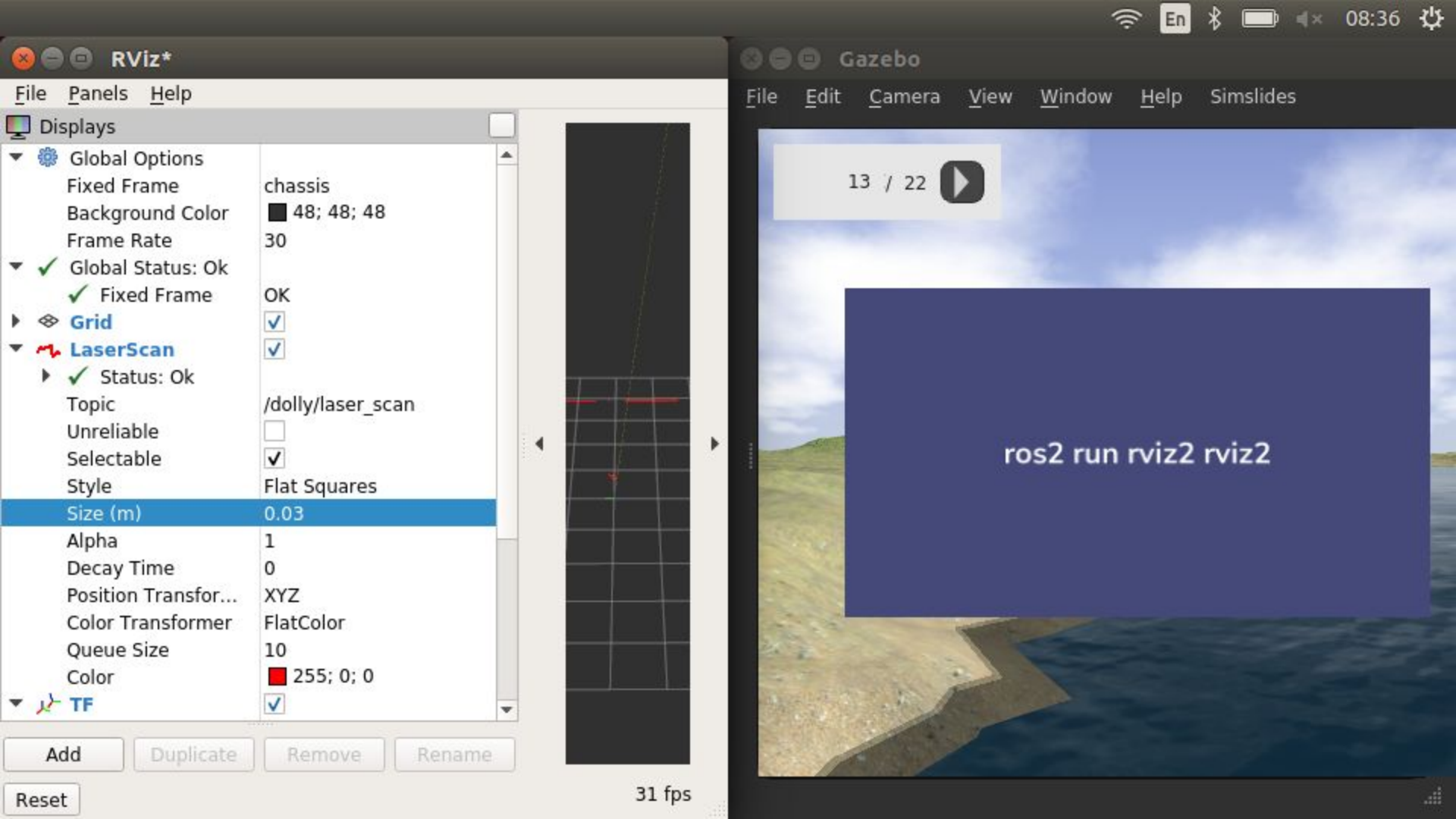

En
08:33
developer@1a11dae88453: ~
developer@1a11dae88453:~$ ros2 node list
laser
diff_drive
follow
developer@1a11dae88453:~$
[Msg] Stack front: 7, back: 12
[Msg] Change Slide: 13
[0] 0:bash*
"1a11dae88453" 08:33 07-Nov-18
Gazebo
File
Edit
Camera
View
Window
Help
Simslides
13 / 22
ros2 node list
ros2 topic list
ros2 topic info
ros2 topic echo

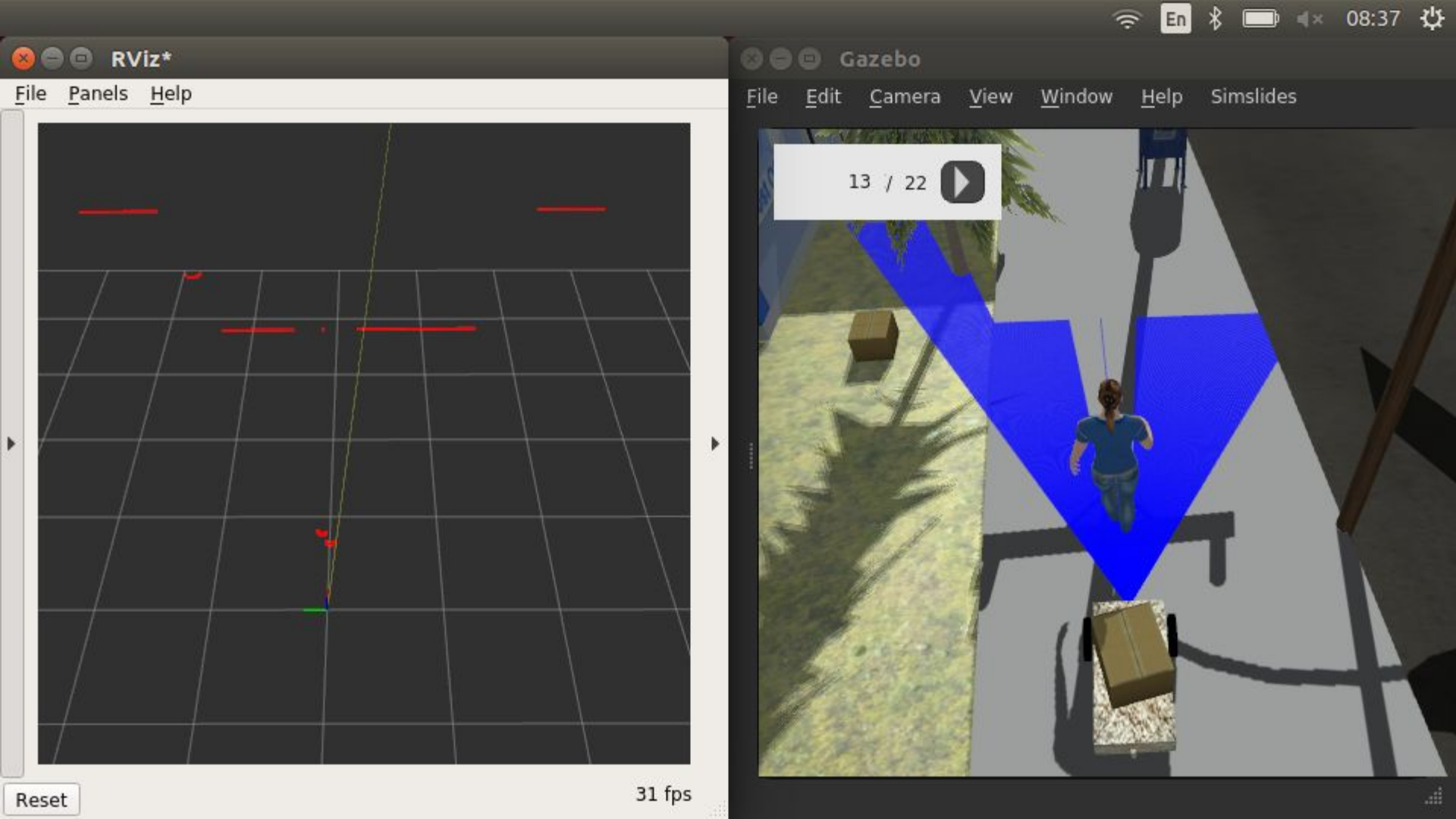

En
08:33
developer@1a11dae88453: ~
developer@1a11dae88453:~$ ros2 node list
laser
diff_drive
follow
developer@1a11dae88453:~$ ros2 topic list
/clock
/dolly/cmd_vel
/dolly/laser_scan
/dolly/odom
/dolly/parameter_events
/parameter_events
/tf
developer@1a11dae88453:~$
[Msg] Stack front: 7, back: 12
[Msg] Change Slide: 13
[0] 0:python3* "1a11dae88453" 08:33 07-Nov-18
Gazebo
File Edit Camera View Window Help Simslides
13 / 22
ros2 node list
ros2 topic list
ros2 topic info
ros2 topic echo


En
08:33
developer@1a11dae88453: ~
developer@1a11dae88453:~$ ros2 node list
laser
diff_drive
follow
developer@1a11dae88453:~$ ros2 topic list
/clock
/dolly/cmd_vel
/dolly/laser_scan
/dolly/odom
/dolly/parameter_events
/parameter_events
/tf
developer@1a11dae88453:~$ ros2 topic info /dolly/cmd
_vel
Topic: /dolly/cmd_vel
Publisher count: 1
Subscriber count: 1
developer@1a11dae88453:~$
[Msg] Stack front: 7, back: 12
[Msg] Change Slide: 13
[0] 0:python3*
"1a11dae88453" 08:33 07-Nov-18
Gazebo
File
Edit
Camera
View
Window
Help
Simslides
13 / 22
ros2 node list
ros2 topic list
ros2 topic info
ros2 topic echo


En
08:34
developer@1a11dae88453: ~
x: 0.0
y: 0.0
z: -0.0001400899887084961
linear:
x: 0.0
y: 0.0
z: 0.0
angular:
x: 0.0
y: 0.0
z: -0.0001400899887084961
linear:
x: 0.0
y: 0.0
z: 0.0
angular:
x: 0.0
y: 0.0
z: 0.00014009475708007813
[Msg] Stack front: 7, back: 12
[Msg] Change Slide: 13
[0] 0:python3* "1a11dae88453" 08:34 07-Nov-18
Gazebo
File Edit Camera View Window Help Simslides
13 / 22
ros2 node list
ros2 topic list
ros2 topic info
ros2 topic echo

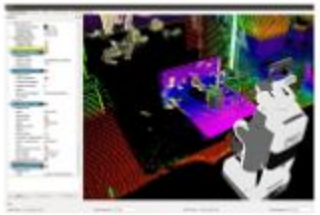
```
ros2 run rviz2 rviz2
```


RViz*
File
Panels
Help
Displays
Global Options
Fixed Frame
chassis
Background Color
48; 48; 48
Frame Rate
30
Global Status: Ok
Fixed Frame
OK
Grid
LaserScan
Status: Ok
Topic
/dolly/laser_scan
Unreliable
Selectable
Style
Flat Squares
Size (m)
0.03
Alpha
1
Decay Time
0
Position Transfor...
XYZ
Color Transformer
FlatColor
Queue Size
10
Color
255; 0; 0
TF
Add
Duplicate
Remove
Rename
Reset
31 fps
Gazebo
File
Edit
Camera
View
Window
Help
Simslides
13 / 22
ros2 run rviz2 rviz2


En
08:37
RViz*
File
Panels
Help
Reset
31 fps
Gazebo
File
Edit
Camera
View
Window
Help
Simslides
13 / 22

Communication

+



Tools

Capabilities

+

Ecosystem

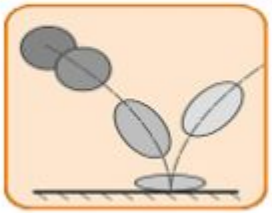
= ROS (2)

1

Noetic
(May 2020)

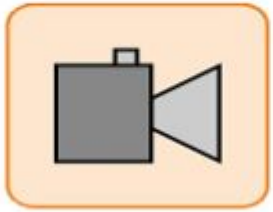
2

Crystal
(Dec 2018)



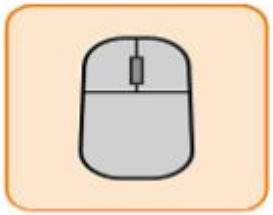
Physics

+



Sensors

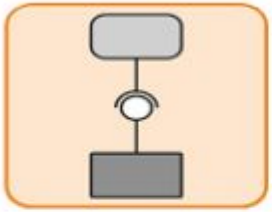
+



Graphical interface

=

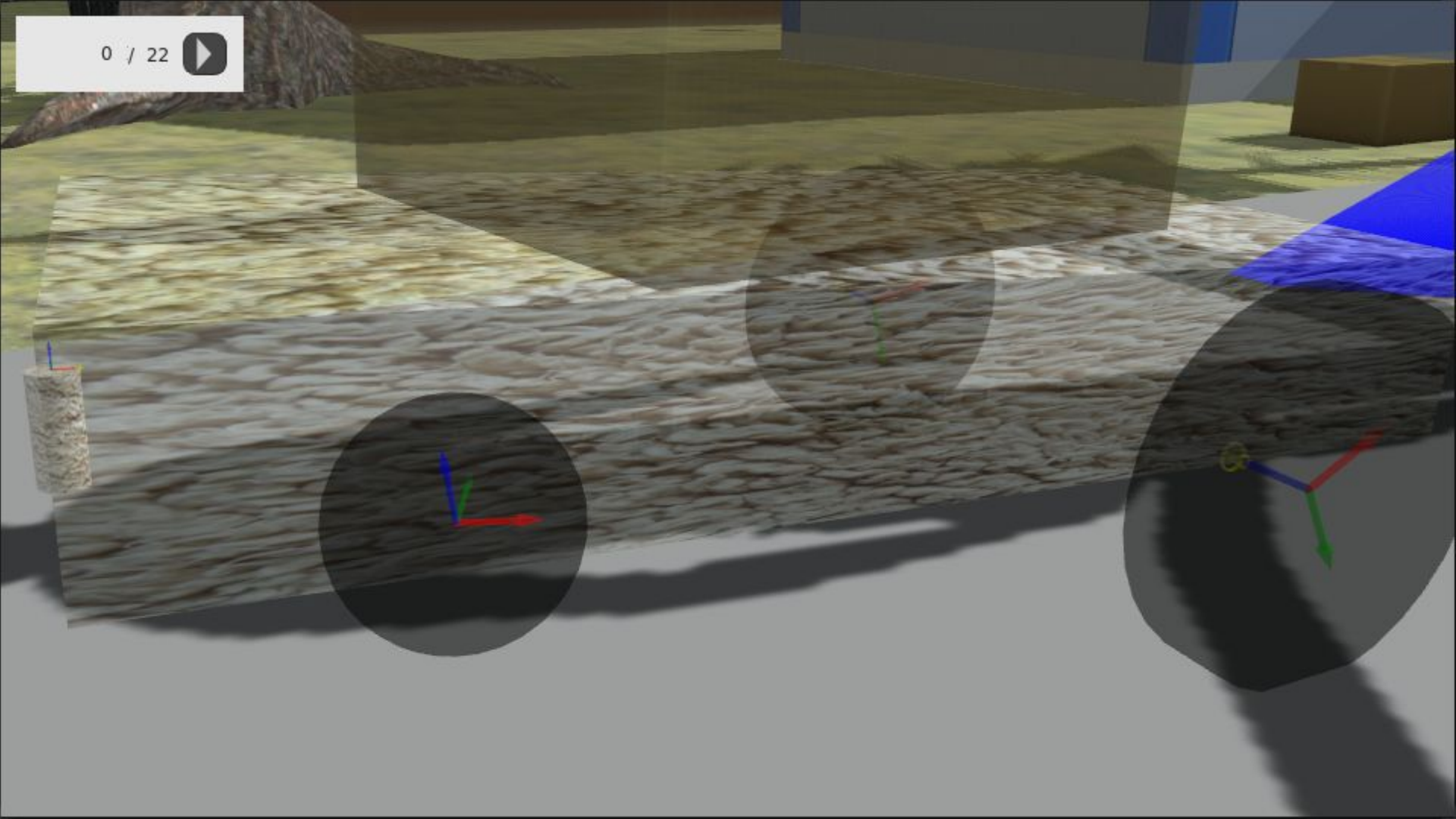
GAZEBO

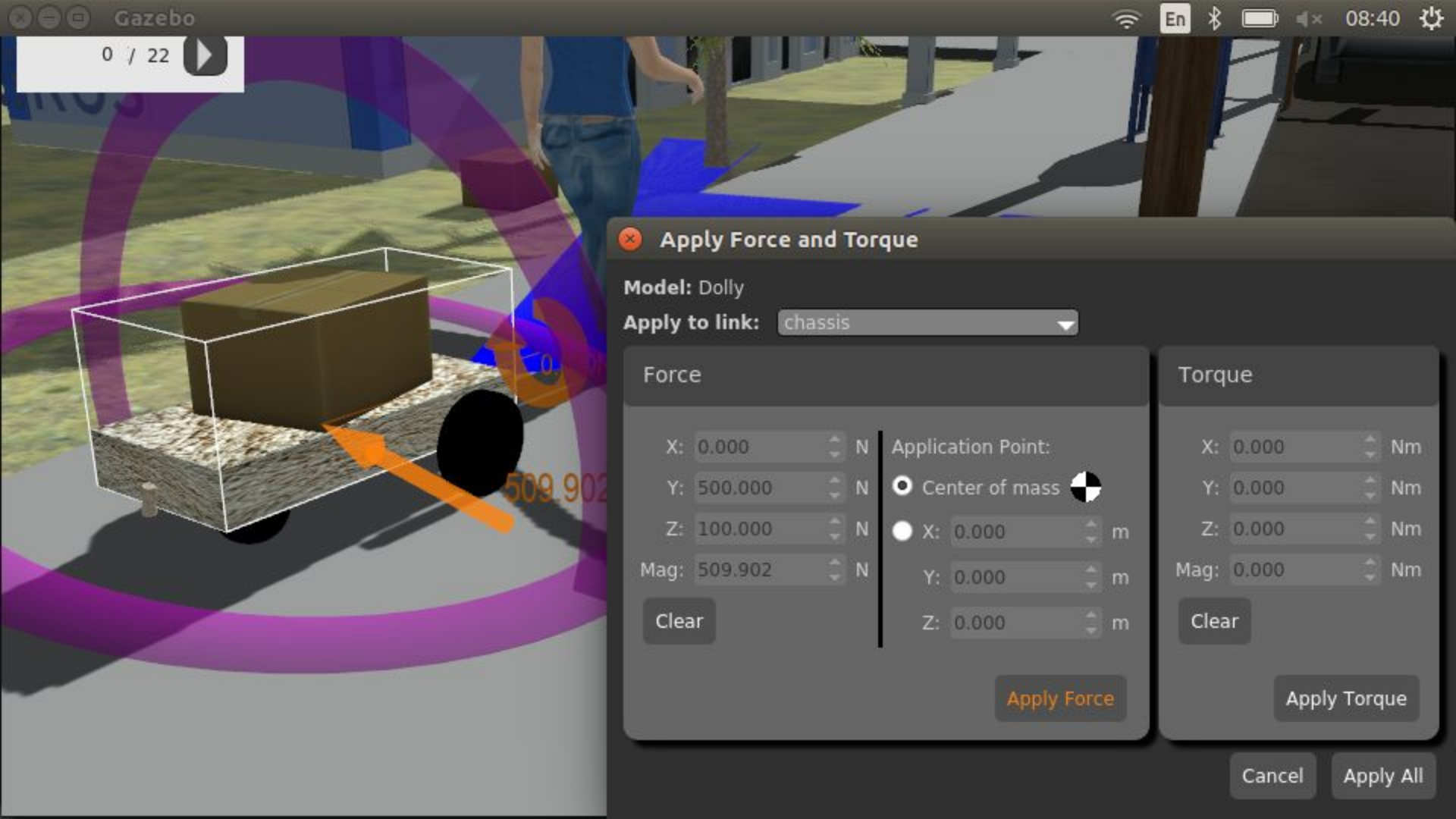


Interfaces

+

Cloud


0 / 22


Gazebo
En
08:40
0 / 22
Apply Force and Torque
Model: Dolly
Apply to link: chassis
Force
X: 0.000 N
Y: 500.000 N
Z: 100.000 N
Mag: 509.902 N
Clear
Application Point:
Center of mass
X: 0.000 m
Y: 0.000 m
Z: 0.000 m
Apply Force
Torque
X: 0.000 Nm
Y: 0.000 Nm
Z: 0.000 Nm
Mag: 0.000 Nm
Clear
Apply Torque
Cancel
Apply All

Gazebo
08:54
File Edit Camera View Window Help Simslides
World Insert Layers
Add Path
0 / 22
Gazebo: Image View
Topic: ~/prius_hybrid_sensors/sensors/back_camera_sensor/imag
Hz: 30.30
Bandwidth: 37.85 MB/s
Radio tower
Rag Doll

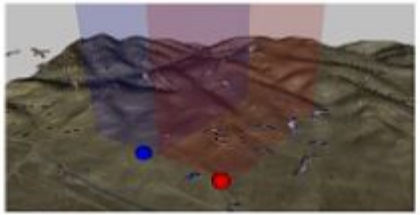
DARPA ROBOTICS CHALLENGE

HAPTIX

RoboCup

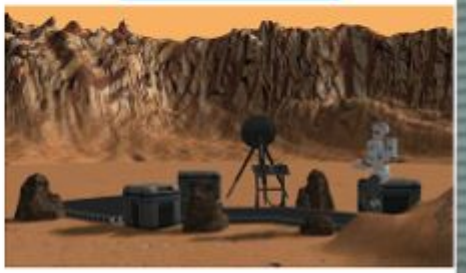
FIRST

SASC



ARIAC

SPACE ROBOTICS CENTENNIAL CHALLENGE



Subterranean Challenge

GAZEBO
Ignition

ROSCon 2012

ROSCon
2013

ROS
KONG
2014

ROSCon
CHICAGO
'14

ROSCon
HAMBURG
2015

ROSCon 2016
SEOUL

ROSCon 2017
VANCOUVER

ROSCon 2018
MADRID

ROS.org

ROS2.org

GazeboSim.org