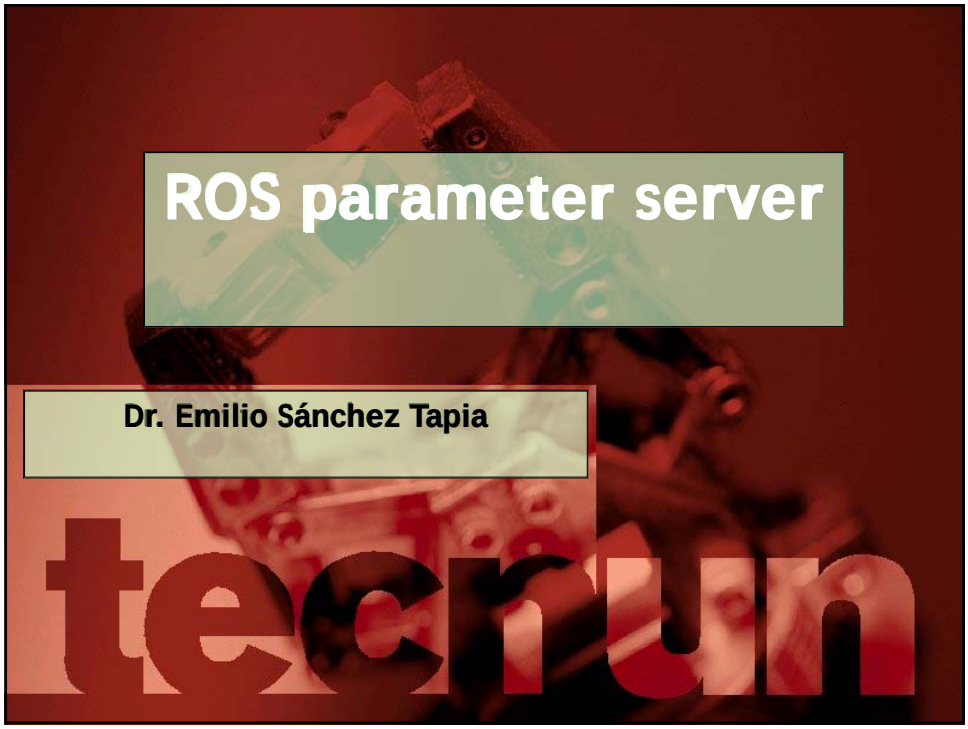
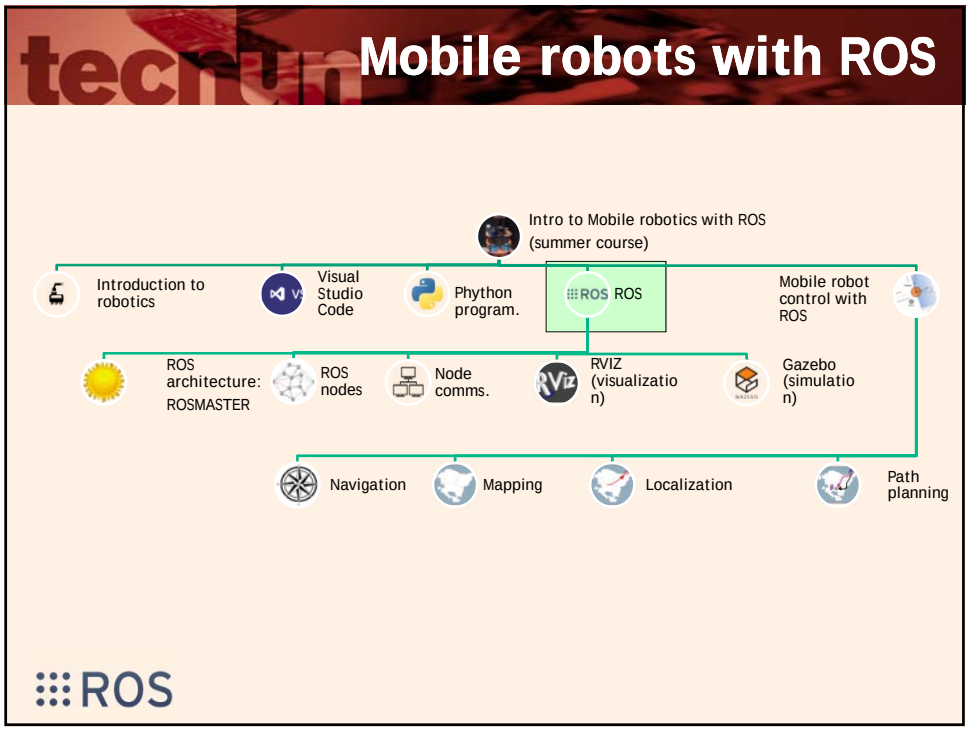

ROS parameter server
Dr. Emilio Sánchez Tapia
tecnun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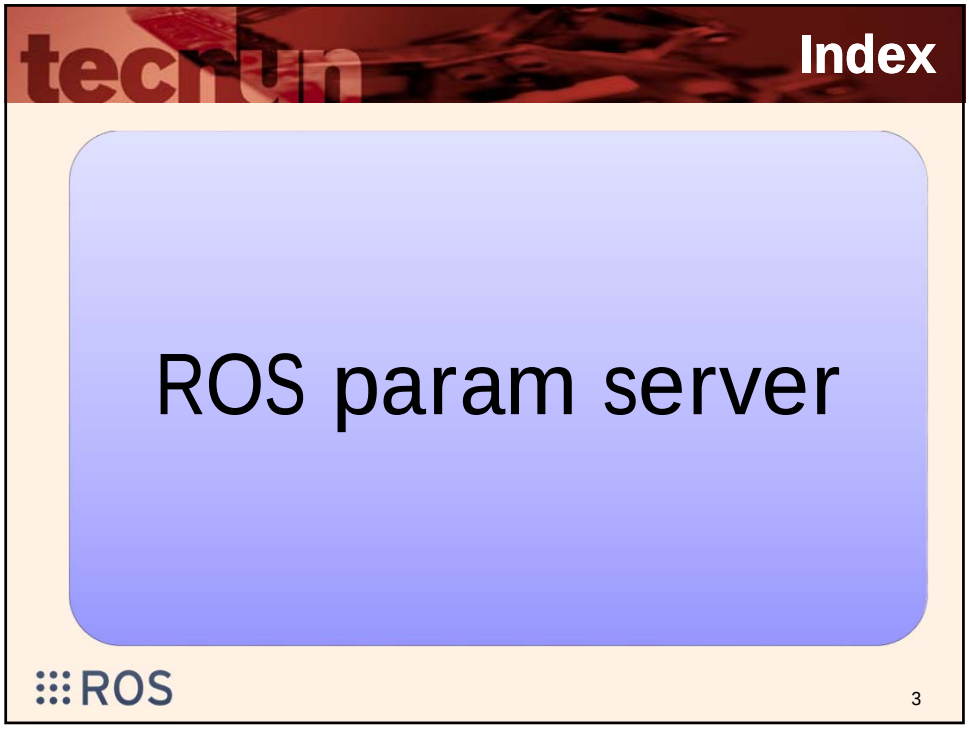
Mobile robots with ROS
Intro to Mobile robotics with ROS (summer course)
Introduction to robotics
Visual Studio Code
Phython program.
ROS
Mobile robot control with ROS
ROS architecture: ROSMASTER
ROS nodes
Node comms.
RVIZ (visualizatio n)
Gazebo (simulatio n)
Navigation
Mapping
Localization
Path planning
ROS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Param server: shell cmds

- A Parameter Server is a shared dictionary
- ROS uses to store global parameters/constants.
- Can be accesed by nodes
- The terminal cmds to play with them:

```
> rosparam set param value →set parameter
> rosparam get  param → get parameter
> rosparam load file → load parameters from file
> rosparam dump file → dump parameters to file
> rosparam delete param → delete parameter
> rosparam list  list parameter names
```

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Checking param list

```
~/catkin_ws$ rosparam list
/rosdistro
/roslaunch/uris/host_rosvirtualserver_virtual_machine__32787
/roslaunch/uris/host_rosvirtualserver_virtual_machine__33307
/roslaunch/uris/host_rosvirtualserver_virtual_machine__38671
/roslaunch/uris/host_rosvirtualserver_virtual_machine__41027
/roslaunch/uris/host_rosvirtualserver_virtual_machine__41479
/roslaunch/uris/host_rosvirtualserver_virtual_machine__45735
/roslaunch/uris/host_rosvirtualserver_virtual_machine__45761
/rosversion
/run_id
rosvirtualserver@rosvirtualserver-virtual-
machine:~/catkin_ws$ rosparam get /rosversion
'1.12.7'
```

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Param server: parameter types

- 32-bit integers
- booleans
- strings
- doubles
- iso8601 dates
- lists
- base64-encoded binary data

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Param server: getting from python

```
global_name = rospy.get_param("/global_name")
relative_name = rospy.get_param("relative_name")
private_param = rospy.get_param('~private_name')
default_param = rospy.get_param('default_param', 'default_value')

# fetch a group (dictionary) of parameters
gains = rospy.get_param('gains')
p, i, d = gains['P'], gains['I'], gains['D']
```

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Param server: setting from python

```
# Using yaml strings
rospy.set_param('a_string', 'baz')
rospy.set_param('~private_int', '2')
rospy.set_param('list_of_floats', "[1., 2., 3., 4.]")
rospy.set_param('bool_True', "true")rospy.set_param('gains', "{'p': 1, 'i':
2, 'd': 3}")
# Using raw python objects
rospy.set_param_raw('a_string', 'baz')
rospy.set_param_raw('~private_int', 2)
rospy.set_param_raw('list_of_floats', [1., 2., 3., 4.])
rospy.set_param_raw('bool_True', True)
rospy.set_param_raw('gains', {'p': 1, 'i': 2, 'd': 3})
rospy.get_param('gains/P') #should return 1
```

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Param server: exercise

- try to set and get parameters using the Python code from previous slides
- try the terminal commands as well

```
> rosparam set param value →set parameter
> rosparam get      param → get parameter
> rosparam load file → load parameters from file
> rosparam dump file → dump parameters to file
> rosparam delete param → delete parameter
> rosparam list     list parameter names
```

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Param server: definition in a YAML file

- YAML is a lightweight markup language that supports all parameter types
- Config.yaml

```
camera:
left:
name: left_camera
exposure: 1
right:
name: right_camera
exposure: 1.1
```

- package.launch

```
<launch>
        <node name="name" pkg="package" type="node_type">
                <rosparam command="load"
                        file="$(find package)/config/config.yaml" />
        </node>
</launch>
```

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Param server: yaml file→yaml format

- YAML uses "tags" to override types, where the YAML syntax may be ambiguous
- Common tags

```
!!str, !!int, !!float, !!seq, !!map
```

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