Making room under Gazebo:
Accommodating newcomers and power users alike

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@chapulinaBR
What is Gazebo?

Goal: Best possible substitute for physical robots

 Physics + Sensors + GUI = GAZEBO

 Interfaces + Cloud
<table>
<thead>
<tr>
<th>Stats</th>
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<tbody>
<tr>
<td>Birth</td>
<td>Fall 2002</td>
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<tr>
<td>Downloads</td>
<td>1k/month</td>
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<tr>
<td>Lines of code</td>
<td>298k</td>
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<td>Tests</td>
<td>1222</td>
</tr>
<tr>
<td>Contributors</td>
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</tbody>
</table>

*Not counting SDFormat, Ignition, tutorials...*
Dependencies

- SDFormat
- Open Dynamics Engine
- Bullet Physics Library
- DART
- Sim::K
- OSPE
- Qt
- protobuf
- Ignition
Cloud

CloudSim
Simulations in the cloud

The Prop Shop
Online sharing simulation resources

Web, desktop & mobile interfaces
Use cases

- Iterate on algorithms
- Prototyping
- Education
- Competitions
- Continuous integration
- ...

Open Source Robotics Foundation
Who are Gazebo’s users?
Skills
Skills
How can we make all of them comfortable?
Open source

- Encourage sharing
- Take advantage of each other’s strengths

[GitHub links: rethinkrobotics, uuvsimulator, erlerobot]
Gazebo Tutorials

Tutorials

Guided

A restricted amount of tutorials, recommended for complete new to Gazebo.

Beginner
- First time Gazebo users
  1. Overview and Installation
  2. Gazebo's Editing
  3. Gazebo's Syntax

耻辱 tutorial
- Building with customDiffs
  2. Building Editor
  3. Adding plugins to gsp

Intermediate
- Custom GUI simulation
  1. Goodwill and Matlab GUI
  2. Mobile apps
  3. Text-based
  4. Graphical user interface
  5. Control plugins
  6. Connect to ROS

Advanced
- Custom GUI customization
  1. Reference a standalone
  2. Custom view setup of gsp
  3. Workspace
  4. Tool quality
  5. Tool review

Categorized

A restricted amount of tutorials, categorized by topic. Click on a section to view the tutorials in that category.

Installation
- Install guides for Ubuntu...
- Install guides for Debian...
- Install guides for Windows...

Useful plugins
- Plugins for Gazebo...
- Plugins for ROS...
- Plugins for Unity...

Sensors
- Sensors for Gazebo...
- Sensors for ROS...
- Sensors for Unity...

physical library
- A new component in...
- A new component in...
- A new component in...

ROS
- ROS API
- ROS packages...
- ROS services...

Developers
- Developing a plugin...
- Developing a plugin...
- Developing a plugin...

Open Source
- Encourage sharing
- Take advantage of each other
Tutorials

Compiling this code will result in a shared library, `/gazebo_plugin_tutorial/build/libfactory.so`, that can be inserted in a Gazebo simulation.

```
$ mkdir ~/gazebo_plugin_tutorial/build
$ cd ~/gazebo_plugin_tutorial/build
$ cmake ..
$ make
```

Every single step

Make the shapes

Make a models directory with a box and a cylinder inside.

```
$ mkdir ~/gazebo_plugin_tutorial/models
$ cd ~/gazebo_plugin_tutorial/models
$ mkdir box cylinder
```

Create a box model

```
$ cd box
$ gedit model.sdf
```
Different users, different tools

Not all robots are created the same

SDF file  Model Editor  Templated file
Command "roslaunch gazebo_ros empty_world.launch" crashes gazebo

install Gazebo in Debian Jessie

c++ file in a gazebo model plugin?

Insert IMU in gazebo model

Joints not independent
“Eat your own dog food”
Mentorship

OUTREACHY

Google
Summer of Code

Open Source Robotics Foundation
There's room for everyone!
Thank you!

http://gazebosim.org
@chapulinaBR