

Simulation worlds

This guide demonstrates how to create your own simulation world in Gazebo, and place items in it.

Gazebo Building Editor

- The first step is to model a building. This is easily done with the Gazebo Building Editor. Open Gazebo, and go to 'Edit' > 'Building Editor'.
- In this editor, you can easily draw the walls of your environment, and add stairs, doors and windows for multiple floors. Afterwards, you can add colors and textures to these walls.
- When you are done modeling, go to 'File' > 'Save as' and save your model in the following location:
`~/.gazebo/models/<your_model_name>/<your_model_name>.world`

Replace `<your_model_name>` with a well-suited name for your model.

Create a world

Next, we insert our own model in a world, together with some items.

- Create a new file `<your_world_name>.world` and place it in
`~/simulation/ros_catkin_ws/src/ardupilot_sitl_gazebo_plugin/worlds/`
- Copy the contents of `/Tech Report/Code/ros_catkin_ws/src/ardupilot_sitl_gazebo_plugin/ardupilot_sitl_gazebo_plugin/worlds/vbuilding/vbuilding.world` from this portfolio into your newly created `<your_world_name>.world` file
- On line 108 in your `<your_world_name>.world` file, replace `model://v315` with `model://<your_model_name>`. This will insert the building that you modeled in your own world. If you want to use the world that can be seen in the simulation video ("Control an Erle-Copter in Gazebo"), you do not have to replace this line
- In the simulation demo, you can see numerous objects placed around the room. You have copied all these items into your own world! For example, take a look at line 288 in your `.world` file. Here, I model all spheres in the room, and give them a position. Change the position by changing the values in the `<pose>x y z roll pitch yaw</pose>` tag, and change the color of the object by changing the values in the `<ambient>R G B sat</ambient>` tag.
- Also, you can insert default objects like a cardboard box. For example, take a look at line 113 in the code. To see all default models that you can insert, open Gazebo and click on the 'Insert' tab. Here, you will see a list of all default objects.

Launch the Erle-Copter in your world

- The last step is to use your new world in the Erle-Copter simulation. In order to do this, open
`~/simulation/ros_catkin_ws/src/ardupilot_sitl_gazebo_plugin/launch/erlecopter_spawn.launch` in a text editor. Around line 15, you will find a line that spawns the `empty.world` file in

your simulation. Comment the entire line, and put this line right below it:

```
<arg name="world_name" default="$(find  
ardupilot_sitl_gazebo_plugin)/worlds/<your_world_name>/<your_world_name>.world"/  
>
```

Of course, you will have to replace `<your_world_name>` with the actual name that you gave to your world. Now, you can run the simulation with your own world! If you do not know how to do this, take a look at the **“Control an Erle-Copter in Gazebo”** tutorial in this portfolio.