Gazebo Simulation Guidelines

Gazebo is a simulation environment where we can test autonomous driving algorithms before deploying them into the physical car. The simulator has the following capabilities:

* Run ROS algorithms on a virtual car
* Output ROS messages to the terminal for data observation
* Testing algorithms in any environment you want to create
* Simulating LiDAR, IMU, and Depth Camera sensors

The following guidelines assume that ROS kinetic, Gazebo, and the F1tenth workspace have been installed.

**Simulation Overview**

You can start running an F1tenth simulation that has already been developed by issuing the following commands:



|  |
| --- |
| $ cd ~/f110\_ws $ source devel/setup.bash $ roslaunch race f1\_tenth.launch |

This will launch the simulation that can be found in the following path:

f110\_ws/src/f110-skeletons/simulator/

This directory contains the scripts for the autonomous algorithms, configuration files for the Gazebo simulator, virtual car, and virtual worlds, and various launch files.

**Configuring Gazebo Parameters**

Please refer to the F1tenth website on how to create and manage new worlds. NOTE however, that you must follow the naming scheme of folders and files in the racecar\_description directory that they have. For example, the urdf and world folders in this directory have different names than the \*.world files that correspond to them. This must be done. When I tried giving all of these files the same name, there were strange invisible wall scenarios in the simulation so beware of this.