A (very) Brief Intro to Gazebo

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3 Main Jobs to Do

- Start gazebo with the .world file
- Start player with a .cfg file
- Run your code

The .world file

- An XML file that initiates the world
- All models that are used must be either in the libraries or written by the user.

The .world file (example)

- The following code puts a pioneer robot with a laser on it in the world:

```
<model:physical name="pioneer">
  <xyz>0 0 0.148</xyz>
  <rpy>0.0 0.0 0.0</rpy>
  <model:physical name="laser">
    <xyz>0.15 0 0.18</xyz>
    <attach>
      <parentBody>chassis_body</parentBody>
      <myBody>laser_body</myBody>
    </attach>
    <include embedded="true">
      <xi:include href="models/sicklms200.model" />
    </include>
  </model:physical>
  <include embedded="true">
    <xi:include href="models/pioneer2dx.model" />
  </include>
</model:physical>
```

The .cfg File

- The configuration file provides the interface between the world and your code.
- Specifies all of the drivers.

The .cfg File (example)

- The code on the right gives us access to two things (position and laser readings) when we start to write our code

```
driver(
  name "gazebo"
  provides ["simulation:0"]
  plugin "libgazeboplayerplugin"
  server_id "default“
)
driver(
  name "gazebo"
  provides ["position2d:0"]
  gz_id "pioneer::position_iface_0“
)
driver(
  name "gazebo"
  provides ["laser:0"]
  gz_id "pioneer::laser::laser_iface_0“
)
```

example.cc (Random Walk)

```
#include <stdio.h>
#include <unistd.h>
#include <time.h>
#include <libplayerc++/playerc++.h>
void Wander(double *forwardSpeed, double *turnSpeed){
      int maxSpeed = 1;
int maxTurn = 90;
double fspeed, tspeed;
//fspeed is between 0 and 10
fspeed = rand()%11;
//(fspeed/10) is between 0 and 1
fspeed = (fspeed/10)*maxSpeed;
tspeed = rand()%(2*maxTurn);
tspeed = tspeed-maxTurn;
//tspeed is between -maxTurn and +maxTurn
*forwardSpeed = fspeed;
*turnSpeed = tspeed;}
int main(int argc, char *argv[]){
      /*need to do this line in c++ only*/
      using namespace PlayerCc;
PlayerClient    robot("localhost"); //connect to proxies
Position2dProxy p2dProxy(&robot,0);
LaserProxy      laserProxy(&robot,0);
      double forwardSpeed, turnSpeed;
      srand(time(NULL));
p2dProxy.SetMotorEnable(1); //enable motors
p2dProxy.RequestGeom(); //request geometries
laserProxy.RequestGeom();
      while(true){
            robot.Read(); // read from the proxies
            Wander(&forwardSpeed, &turnSpeed); //wander
            p2dProxy.SetSpeed(forwardSpeed, dtor(turnSpeed));
       //set motors
            sleep(1);}
```