Rackspace Laser-Bot Mission To Mars

v2016-03-19c_tweeks

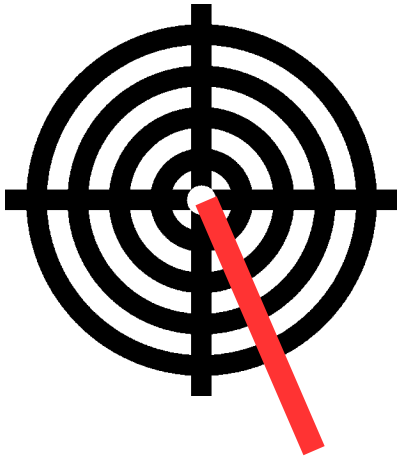
This PDF → https://github.com/LetsCodeBlacksburg/LCBB_arduino-collision-bot/blob/master/2016-03-19_arduino-robotics-laser-bot-lab.pdf

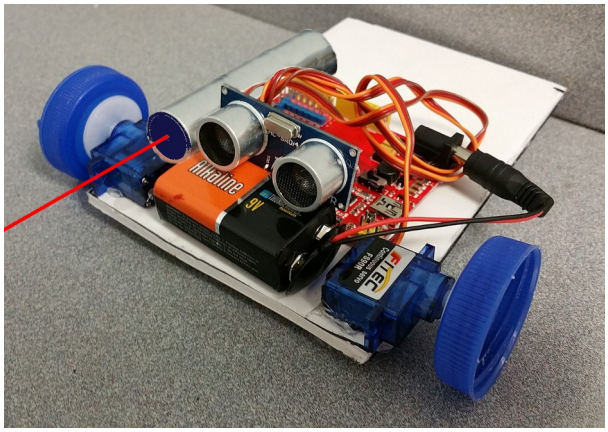
Scenario:

We have discovered an alien race on Mars that is preparing to attack Earth! With your help we have sent our best remotely programmed laser-bot to take out the alien ships before they can launch their attack, but we need to hurry! The distance is too far to remotely control the bot, so YOU need to program your laser-bot rover with precise movements to take out the alien ships before they launch their attack on Earth!

Mission:

Program your laser-bot around the alien obstacles, get in range of the target (left, below) and fire your laser canon! The object is to make a direct hit within the two most center rings to take out the would be alien invasion!





You get three tries to program in the exact navigational and fire commands into laser-bot before the aliens arrive and blast you with their own lasers!

Here are the programing commands you have available to you for navigating and firing your on board laser-weapon:

Basic Movement Commands:

```
forward(x); // goes forward x inches
backward(x);// goes backwards x inches
turnL(y);   // turns left around y degrees
turnR(y);   // turns right around y degrees
slowDown(); // slows to a dramatic stop
stopAll();  // Stops both L & R wheels

pause();    //  sets the bot to pause (and wait) mode
fireLaser(z);       // fire the impressive 5,000 microWatt 650nM laser cannon z times
```

More Advanced Commands:

```
pauseNgo();       // uses the ping sensor as a
                  //  "start/pause" switch
dist=getdist();// looks with ping sensor to
                  // get distance to objects
if ( dist < 4) { //do stuff }
while ( condition ) { //do stuff }
```

Programming Your Laser-Bot Rover:

Find the **`MAIN LOOP`** code area and put your code between the **{** and **}** brackets. The code in these brackets will run over and over, so we recommend leaving the **`pauseNgo();`** code at the beginning to keep your bot from running the same motions over and over. Your code should start off looking something like this.

Example Code: (find at the bottom of the program)

```
// ********************************************************
// ******* MAIN LOOP ***************************************
// ********************************************************
// Runs forever...
void loop() {       // anything starting with "//" is jusy a comment :)
  pauseNgo();       // Makes the ping-eyes sensor be a "start/pause" switch

  ////// Insert and fill in your code here

  forward(10);      // This tells the bot how many inches forward to go.


   ////// end of your code
  pause();          // Sets bot to pause mode
  // loops back to top of main loop()
}
```

After entering in your own code for navigating your robot to the target, click the  compile button to compile and upload your code to the bot. Once the wheels initialize, unplug the bot, put the bot in position, hook the battery back up, the wheels initialize again and wave your hand in front of its eyes to go attack the alien ship!

Q: How far did the bot travel (measure it)? _____

Q: How much further does it need to travel to reach the first marker? _____

Q: What are the other commands you will need to enter to get your laser-bot into firing position?

_____
_____
_____
_____
_____
_____
_____

For the starter code for this workshop go to
→ https://github.com/LetsCodeBlacksburg/LCBB_arduino-collision-bot

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