**Rescue Robot Competition**

It is finally time to formally start our first competition.

**Introduction:** The competition will take place on 7/12. Each team will have 2 runs through the course. There will be around 1 hour between runs for “fixes”, but obviously you will not be able to test on the course. The main goal of the competition is to build up a layered set of behaviors, and choose which ones your robot has the best chance of completing.

Before EACH run you will pick one main goal, and any number of side goals. (One, code freeze must be picked by 7/10) So you would state, A+1 and 2 if you wanted those rules for your first run.

**Premise:** Imagine that you are building a robot to search for victims in a disaster. You will start outside a house, and follow a winding foot path to the front door. It is possible that obstacles will be in your way. If you find any victims, you will need to indicate them with a sound. Once you arrive at the front door, you will need to search the house and find a “bomb”.

**Setup:** The line will be between 0.5 and 3.0 inches thick, and will vary in thickness. You will have a similar line to practice with, but the final line will be reserved for the competition day. The obstacle will be the size of a 1 quart mason jar. It will be placed on a section of line with at least 4 inches of straight line before the obstacle and 8 inches of straight line after. You should make a 7 inch semicircle to the right to avoid. You MAY cross other lines while doing this. Any “People” found while avoiding should NOT be indicated, since they will have already been found during line-following and therefore would be double counts. Folks will be asked to stay at least 2 feet from the competition area.

Victims will ALWAYS be in the line section of the course. They will be represented by strips of tape, 3 inches long, I inch wide placed 3-4 inches off of the line to the right. They will be parallel to a tangent to the line, as measured from the midpoint of the tape. There will be no victims within 8 inches of the obstacle. The tape will be blue

The house will have 10-12 inch high walls. It will be painted solid flat black. It will have three rooms. The bomb can be in any room. The boundary between the line and house will be marked with red tape.

Your robot must be shorter than the walls and can in no way look over them.

The bomb will be represented by the IR ball. It will be set for 1200Hz

**ALL LAWYERING WILL BE PUNISHED!!!!!**

Scoring

Choose 1 Main Goal, and as many optional goals as desired

|  |  |  |  |
| --- | --- | --- | --- |
| Main Goals | | | |
|  | Total Base points | Sample Scores and deductions | |
| A. Follow Line and enter house. | 10 | 4 points for First ½ of line  4 points for second ½ of line  1 point for crossing red line  1 point for stopping with sound  -2 points if line-following looks lucky. | |
| B. Follow Line and enter each room  (Just break the plain of the doorway) | 15 | 2 points for line  2 points for entering house  3 points for entering each room (9 total)  2 points for stopping with sound  -3 points if line-following looks lucky. | |
| C. Follow line and Find Bomb  (Find the ball and stop in the correct room.) | 20 | 2 points for line  1 point for entering house  7 points for entering room with ball  10 points for stopping with sound in same room as fire  -4 points if line-following looks lucky. | |
| D. Follow line and deactivate Bomb  (Find the ball and stop close to it) | 25 | 2 points for line  1 point for entering house  4 points for entering room with ball  3 points for stopping with sound in same room as fire **Either 5 points if you stop within 6 inches**  **Or 15 points if you stop within 2 inches**  -5 points if line-following looks lucky. | |
| E. Follow the line and remove the Bomb | 40 | 2 points for line  1 point for entering house  3 points for entering room with ball  2 points for indicating with sound the room with ball **Either 5 points if you move the bomb at least 2 inches,**  **10 points if Bomb makes it entirely out of the room,**  **Or 32 points if you take the ball out of the house**  Base Score of -10 if you fail to enter house, plus any deductions below | |
| Optional Goals | | | |
|  | | | Details |
| 1. Find victims (Marks beside line) | | | +5 For finding correct number  -3 For missing/extra |
| 2. Obstacle in Line (Can not be moved) | | | +5 for dealing with it.  Normal score to point of failure if missed |
| 3. No bumps (You do not bump the walls or Obstacle. The ball can be bumped) | | | +5 if completed  -5 if attempted and failed |
| 4. Code Freeze.  (You may only have 1 program to choose from. But you can pick any option for either round even if what you pick does not match your original goal) | | | +2 if you mail your code to me by 11:59PM on Firday 7/10 and make no changes after that point.  -2 if you change your code before the first run.  -4 if you change your code between runs. |

