

CONTEST # 1: LINE FOLLOWING

Objective

To build an autonomous robot, and to test the ability to recognize a navigational aid (the line). The robot begins at “Start” position, travels completely via the line, and returns to the “End” position. The robot that does this in the least amount of time wins. The exact layout of the course will not be known until contest day.

The line is black, approximately 0.75 inches (2.0 centimeters) wide. All curves have a radius of at least 4 inches and at most 15 inches. Floor is white and made of plywood. (closetmaid 1/8 in).

Maximum Time to Complete Course

Three minutes.

Scoring

I. Time: 80 points

The team that completes the trial in the least amount of time will be awarded the full 80 points. Following teams will be deducted a total of 1/4 point for each additional second above the lowest time. Teams will be allowed a total of 4 helps for each trial. Meaning, if the robot gets stuck, or travels off the course the team will be able to help the robot back on course within a radius of 6 inches for a penalty of 4 points each time the team helps the robots. The best run from the two runs will be used in the total score.

Maximum time to complete course: 3 minutes.

II. Program: 20 points

Teams will be responsible for providing their codes in the flash drive given at the training day. In the flash drive should be only two codes, one for the Line Following and other for the Maze. If code is modified after first trial, make sure you save in the flash drive. The code will be graded based on originality, and clarity. Any code found to be an exact duplicate of online examples will be an automatic loss of all 20 points. Teams should review examples, but try to use different methods of accomplishing the same thing. Examples of clarity are using comments, labels for constants and pin declarations, etc.

III. Bonus:

Teams will be rewarded 15 points per trial for completing course without helps.

Teams will be rewarded 5 points per trial for remotely starting the robot.

Logistics

Each robot will make one run, proceeding until all robots have attempted the line following. Each robot then does a second run through the line following. The judge will allow some discretion if a contestant must delay their run due to technical difficulties. A team may modify the circuit or the code before the second run. A robot may remember what it found on a previous run to try to improve its time (mapping the line following on the first run), and can use this information in subsequent runs-as long as the robot does this itself.