E11: Autonomous Vehicles
Fall 2015

Lab 6: Line Following

In this lab, you will program your robot to follow a black line on a white background using the infrared reflectance sensor.

Strategies

The basic strategy for this lab is simple:

1. Search for the line by swiveling left and right
2. Once you find it, travel forwards
3. Once you lose it, go back to step 1

We recommend defining thresholds as constants at the top of your code, so that you can change them easily.

The Great Robot Race

Once you get basic line following working, it's up to you to optimize. In class the next week, you will race your robots around the squares on the floor of the Parsons basement. Robots will start on opposite corners of the square and travel counterclockwise. The first robot to catch up with the other will be the winner. If no robot has caught the other within 2 minutes, the closer one will win. If "close" is too hard to call, the judges may declare a tie.

There are plenty of optimizations that you can make to speed up your robot. You can also make your searching algorithm more complex, to make the robot re-find the line more efficiently. One more thing to notice is that robot loses line more easily at corners.