



E11: Autonomous Vehicles

Fall 2010

Harris & Lape with Keeter & Ong

Lab 7: Line Following

Introduction

The first beacon in the game can be found by following a line on the game board. In this lab, you will program your robot to follow a black line on a white background using the infrared reflectance sensor. You have already used the reflectance sensor in the previous lab, so refer back to that if you've forgotten how it works.

Strategies

The basic strategy for this lab is simple:

1. Search for the line
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 on Monday, you will race your robots around the squares on the floor of 2nd floor Parsons. Robots will start on opposite corners of the square. 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. It might be a good time to investigate other gear ratios if speed is more important than precision. You can also make your searching algorithm more complex, to make the robot re-find the line more efficiently.