Connor Osborn

Madeline Henderson

Dr. Jason Isaacs

February 28, 2019

Lab 4

In lab 3, we looked over how a sonar can be used to guide a robot through a maze. During this lab, we did something similar using a light sensor to respond to light in addition to the sonar responding to walls. Within this experiment, after following the instructions given by the professor, we ended up testing the codes and algorithms throughout the first part of the lab and we perfected and fixed the bugs during the second part of the lab. Our robot was successful in the race to find the light source and it even exceeded our expectations.

The first thing that we did was add the light sensor to the robot at a 45 degree angle from its X axis. Then, we tested the code given to us on the lab pdf and it ended up working. After that, we combined code from the previous lab and our new light sensor code. We made several adjustments until the robot worked.

During testing we noticed if the robot had just the corner of an obstacle between it and the light, the light sensor could see it and the robot would rotated to drive toward the light source but then have the sonar tell it to stop because it saw the very corner of the obstacle. To avoid this, we added a case where if it was searching for to long, it would blindly search for a few seconds, divide its last seen brightest light by 1.5 and then restart the search for the light. Our robot, out of about two or three, was the only on to get stuck in this situation and still make it to the light.

Once we were done with all code adjustments, we raced the robot towards the light using the new sensor. The results of our robot are below:

|  |  |
| --- | --- |
| Run Number: | Time (in seconds): |
| 1 | 12 |
| 2 | 55 |
| 3 | 70 |

We were first on the first trial, and after that the robot got slower and slower. Our robot was very successful considering that no run went over two minutes and it did make it to the light each run.