MASSACHVSETTS INSTITVTE OF TECHNOLOGY
Department of Electrical Engineering and Computer Science
6.081—Introduction to EECS I
Spring Semester, 2007

Thursday Laboratory for Week 10

This handout contains

- Thursday April 19th lab on chasing another robot
- A copy of Lab 9, in case you need it.

IMPORTANT: There is no nanoquiz today, but if you wish to retake either or both of the last two nanoquizzes (for weeks 7 and 8) (actually modified versions of these quizzes), you can do that today.

Go to the Light

Last week you added eyes to the robot head, and then designed two different controllers to cause the head to turn to track a light (if you did not finish the two controllers last week, which no one did, we will help you try to finish quickly today). This week we will divide you in to groups of four, (so you will have to decide which pair's robot head to use) and then have the four of you work together on using python and SoaR to control the robot and its head so that when the robot starts some distance from a lamp, it will go to the lamp.

The robot head and the NI box attach to the robot with velcro (which we have), and the head can be connected to the robot's power supply (the red +12 volt and the black ground wire protruding from the robot, but you must use one of the robots labeled "Pioneer"). Please be careful when making the power connections. If you short the wires, the robot will blow a fuse that is a little cumbersome to replace. Please get an LA to help you.

Your robot will have to find the lamp, even if it is not facing the lamp, turn towards the lamp, and then go to the lamp. There are many, many ways to approach this problem, please discuss the alternatives among yourselves and with your LA before you start coding or hacking. Good luck!

To use SoaR and the NI box together, which you need to do for this lab, one has to follow a very particular protocol each time you restart your program to avoid an annoying driver problem.

- Unplug and replug in the NI box USB connector.
- Turn off and then turn on the robot.
- Start SoaR **IN THE NILab subdirectory**.
- Use the brain you have written from your home directory.

If you do not follow this annoying protocol, you will get all sorts of weird error messages or, SoaR will just hang.

Checkpoint: 3:30 PM

- Describe and discuss your strategy to your LA.

Checkpoint: 5:00 PM

- Demonstrate how well you can follow the robot.

Lab writeup due Tuesday, April 24th

Please write up a description of your strategy for robot following, and explain your reasons for the design decisions you made. Include copies of any software you wrote, as well as a description of how each program worked. Finally, describe how well your strategy worked. Explain why your strategy was, or was not, effective.