1 Dates

- Assignment 0 written handin due: Friday, September 18, 2009 (10 pm)

2 Introduction

Assignment 0 is a written analysis of the built-in demos provided on the iRobot Creates. This assignment is designed to expose you to the inherently experimental nature of autonomous robotics, as well as written skills necessary to communicate your results. You should choose **two** of the 10 pre-programmed routines from the list displayed in room 404 (also available on the iRobot website), design experiments to test these routines and discuss the results.

Your experiments should involve several trials with controlled variables and quantitative as well as qualitative data. In addition, the course staff should be able to reproduce them using your instructions and reach similar results. Keep in mind that you should not rely entirely on the descriptions provided by the demos as they are not always exhaustive. For example, some routines will react to obstacles or IR walls even though it is not mentioned in their description.

In your writeups, make sure to include a brief description of the algorithms you believe are in use and a list of the sensors they rely on. For referrence, the sensors are : IR (Virtual Walls/Homebase), Cliffsensors, Bumpers (Left and Right) and Odometry. You are also encouraged to use photos and or videos as well as any other type of media to document your experiments.

There is no specific lower or upper bound on the length of your written analysis. Take as much or as little spa ce to effectively make your argument. However, we do recommend staying within 1000-2000 words.

3 Running the Demos

To run the demos, first put a battery in the iRobot Create of your choice and turn it on. Once it is on, select a demo by pressing the "Next" button (it has a double forward arrow on it) as many time as necessary. The robot will beep to indicate what demo number is selected. Press the play button and let the demo run its course. If your demo does not stop automatically, you can end it by pressing either of the buttons on the create.

All you have to do to use the home base is to plug it in a power outlet.

To use a virtual wall, press the power button, make sure the slider is set on "4'-7'" set it somewhere in the room.

Do not forget to put the batteries back in the "discharged" bin after you are done using them.

4 Report Format

Particular attention should be given to the report format, as it will be used for later assignments in this course. Greater detail is provided in the course missive. Briefly, your report should include the following sections:

- Introduction
  A quick introduction to the assignment that restates its purpose and summarizes your work

- Approach and Method
  A more detailed explanation of the problems at hand and the way you intend to tackle them. Detail the experiments you want to run and formulate some sort of theory
- Experiments and Results
  Show pictures of the experiments and give your results.
- Discussion
  Interpret and Discuss your result. Briefly give a possible algorithm for the demos you are analyzing. You can also figure out if this is supposed to accomplish a useful task (in the context of a roomba for example).
- Conclusion
  Sum up your result and discuss possible developments

You can refer to the example writeup in the course directory and website for more details on the layout.

5 Handin

The written analysis involves a single deliverable, electronic submission by 10:00pm on Friday, September 18, 2009. You should prepare your submission to be web-viewable (namely in an HTML-based format) with supplementary images and media. For handin, you will commit your files to a SVN repository (instructions can be found on the course website and directory) viewable only to yourself and the course staff.

6 Grading

Your written assessment will be evaluated according to the following factors:

Smurv Spotting grading breakdown	
- Introduction	15%
- Approach and Method	25%
How rigorous is your procedure? Did you forget any special cases/sensors?	
- Experiments and Results	20%
Is the setup well documented? Do the results make sense?	
- Discussion	25%
How well do you understand the routine? Does your analysis make sense with regard to your results?	
- Conclusion	15%