Homework 10:

Creative Scribbler Robot

Assigned: Thursday, November 20
Due: Monday, December 8, 2014, at 10:00 AM

For this last homework, you will be demonstrating something creative with your Scribbler. You are free to make use of what you did in Homeworks 8 and 9, but you need to add something new, as well. The point is to demonstrate intelligent connection of sensing to action. It needs to be clear from watching the robot what it is doing, from a basic description that you provide. *One behavior that is not allowed is a simple line following behavior (using the sensors underneath the robot). You need to do something more creative than that.*

Extra credit points (up to 20) will be allocated for the creativity and difficulty of what your robot shows. Graduate and undergraduates will be graded on different scales.

You are also required to explain and demonstrate your Scribbler (via video) at our final class meeting on December 8th (10:15AM – 12:15PM) and answer any questions that the class may have. This demonstration/explanation counts for 15% of your grade. In addition, you will provide feedback to your student class members on their explanation of their robot, and what the robot does. This feedback will count as the last quiz of the semester. (That is, your completion of the feedback forms will earn you full credit for the quiz; not completing the forms means you get a 0 on the quiz grade.)

Robot behavior:
This is an open-ended assignment. Your robot's behavior can be anything that shows you can actively and intelligently control its motion using its sensors.

Video:
Create a video showing your robot's behavior. The video should be a minimum of 10 seconds long, and no longer than 2 minutes. The video should include some uniquely identifying information (such as a closeup of the Scribbler number on your robot, or you as you start the robot, or your cat, or whatever, so that it is clear that this is your unique Scribbler control software that you are running). The video format must be something that can be viewed using VLC media player (http://www.videolan.org/vlc/index.html).

Individual or Teams:
This can be a team assignment, if you like. Teams can be no more than 4 students. (See below for further instructions for teams.) Each team member will be required to state (individually) what each team member contributed. If there are team members who do not contribute, then their grade will be reduced.

What you'll turn in:
What you turn in will be a description of what your robot is doing, the code that generates the robot's behavior, and a video of your robot executing the control code. Additionally, if you worked as a team, you must turn in a description of what each team member contributed to the task.

SAIS Extra Credit:
You will receive 10 points of extra credit on HW 10 if you turn in evidence of completing the SAIS evaluation form, here: http://oira.tennessee.edu/sais/. Email this to the instructor (leparker@utk.edu), or hand the evidence to her in class. The SAIS system closes at midnight on Wed., Dec. 3, so you must

complete your evaluation by then. Evidence that you have completed the evaluation must be turned in by Dec. 8.

Grading:

- 85%: Usual code, writeup, etc.
- 15%: ~5 minute presentation and demonstration of your robot (via video) at last class on Dec. 8. No slides are needed, but you must explain what your robot behavior is, and how you achieved it. And, you must show the video of your robot's behavior and answer any questions that the class may have.
- Extra credit: up to 20 points; based on a combination of in-class feedback during Dec. 8th presentation, and instructor evaluation. Up to 2 projects will receive the maximum of 20 extra credit points. Other projects may also receive from 1-19 points, based on the judging and instructor evaluation. Judging is based on creativity and degree of difficulty in achieving the intelligent robot behavior.
- SAIS extra credit: worth 10 points; see above

Writeup:

a) [*People working as individuals, or "lead" team members*] A discussion of what you implemented on your Scribbler, including a description of the sensor(s) used, and a discussion of the algorithm you implemented. This should be a single pdf file, named "*team-members-last-names-HW-10.pdf*".

b) [*People working as individuals, or "lead" team members*] Robot's control code, called "*team-members-last-names-HW-10.<appropriate extension>*" if you worked as a group, or "*Your-last-name-HW-10.<appropriate extension>*" if you worked along.

c) [*People working as individuals, or "lead" team members*] The video of your robot running and using at least one sensor. Name the video "*Team-members-last-names-HW-10.<appropriate extension>*".

d) [*If you worked as team*] Each team member must generate an individual statement that outlines what each team member did. This must be in your own individual words, and must be submitted to Blackboard individually, as a separate document. All team members submit their own individual statement. In this document, state the name of the "lead" person who is submitting the team project. Only that "lead" person should submit the remainder of this assignment. This should be in a single pdf file, named "*Your-last-name-Group-summary-HW-10.pdf*".

SUBMITTING YOUR HOMEWORK:

[*For people working as individuals*]:
Submit parts a, b, c, as a single tar or zip file (compressed if needed, using only zip or tar (*not* rar)).

[*For people working as "lead" team members*]:
Submit parts a, b, c, as a single tar or zip file (compressed if needed; do not use rar). Submit part d as a separate pdf file.

[*For people working on a team, but not the "lead" team member*];
Submit part d as a single pdf file.