

cis3.5, spring 2009, project IV—agent-based programming

overview

- This is the final project for cis 3.5, covering unit IV and agent-based programming.
- The project is worth 15% of your term grade. It will be marked out of **15 points**.
- The project is due via email on **Monday May 18** at midnight.
- Email the project to: sklar@sci.brooklyn.cuny.edu.
- If your project uses multiple files, PLEASE use a **zip** utility to bundle all your files together and send them as ONE attachment to the email.
on a PC: use **WinZip**
on a Mac: use **File - Create Archive...**
on Linux: use **zip**

project description

- The purpose of the project is to demonstrate your understanding of agent-based programming. You will do this using NetLogo and with a LEGO robot and RoboLab.
- One of the key aspects of *agency* is the notion that an agent exists in an environment and that it responds autonomously to conditions and events in its environment. In your LEGO robot world, you have hopefully learned how to make the robot respond to its touch sensor and to its light sensor. In your NetLogo world, you have hopefully learned how to make an agent (turtle) respond to its “patches”.
- In this project, you will design an environment for a LEGO robot and demonstrate how the robot can respond to its environment. You will also create a model of that same design in NetLogo and demonstrate how multiple simulated agents respond to the environment.

1 design

- This part is worth 5 points.
- (a) Design a two-dimensional “environment” that you will construct both physically, for your LEGO robot, and virtually, for your NetLogo agents. The physical environment will be built using white foamcore and placing colored tape and/or stickers on the foamcore. The virtual environment will be created by coloring the patches in the NetLogo interface canvas in the same pattern that you have constructed on the foamcore.
- (b) Write a brief description of the robot’s behavior—how it will respond to the different colors in its environment. *Note that you will not have a lot of time to write something very sophisticated, so be careful to design your robot behavior sticking to what you know how to do in RoboLab and in NetLogo.*
- Submit a document that includes a drawing (part (a), above) and a brief description (part (b), above). Check your grammar and spelling. Save your document in PDF or DOC format.

2 robot applications: physical and virtual

- This part is worth 10 points.
- Implement the robot behavior that you designed (above), in both RoboLab and NetLogo.
- The RoboLab implementation must be done in class. Use a LEGO robot with one light sensor pointing down to the floor. Submit either a drawing of the code or a screenshot as an image file (e.g., JPG or GIF) or a source code (.vi) file.
- The NetLogo implementation can be worked on in class and also at home. Check the class web page for the URL where you can download NetLogo and use it at home. NetLogo is free and runs on Mac, Linux and PC computers. Submit the NetLogo source code (.nlogo) file.
- Note that since the RoboLab portion can only be worked on in class, you may not have time to completely finish the code. In that case, submit as much as you have gotten done. AND, be sure that your NetLogo implementation is complete!