Team Project

EES 4760/5760 Agent- and Individual-Based Computational Modeling

Due October 10–11

Overview

You will work with a partner to code a model from the ODD specification in the textbook. Your team will be assigned one of the two projects.

Each project specifies a model described in *Agent-Based and Individual-Based Modeling*. The project has two parts:

1. Code the model:
   (a) You should divide the coding for the model with your partner (e.g., one partner writes the code for the patches and the other writes the code for the agents). You should work together, sharing a computer, with one partner writing code while the other looks on and provides advice and questions. This is an excellent way to be productive and to catch programming errors (bugs) early.
   (b) Test the code. Run tests to make sure that your model is doing what the ODD specifies. Keep a log of bugs that you catch, how you identified and fixed them.
2. Use the model to explore agent behavior and investigate the questions posed in the textbook.
   (a) Vary parameters in the model and record the effect.

With the results of the two parts:

1. For class on Thursday October 21, you and your partner will give a short presentation for the class in which you describe the problem, discuss any interesting obstacles of problems you encountered in coding the model and how you fixed them (or why you couldn't fix them), and what you discovered from running the model. One partner should present about coding and testing the model and the other should present about what you learned from the model.
2. By the end of the day (before midnight) on Friday October 22, upload a written report to Brightspace on the procedures, results, and interpretation of the textbook exercises associated with this project. The report should be a minimum of two pages, double-spaced, in PDF or Microsoft Word format. This is a team project, so you and your partner should work together to write a single report. Be sure to give your report a title and include the names of all the authors (team members).

   In addition to the report, you should also upload a ZIP file containing your model or models (NetLogo files) and any other files your model requires.

Project 1a: Adaptive Behavior

Use the ODD for the business investor model in section 10.4.

1. Investigate the effect of changing the sensing range of investors, as described in Section 10.4.2 and the impact of allowing investors to network, as described in Section 10.4.3. Did you get the same results as the textbook reports?
2. Use your model to do exercises 10.3 and 10.4 to extend your investigations of sensing range and networking to look at sending ranges beyond 2 patches and varying the size of the network from 0 to 15 investors.

Project 1b: Agent Interactions

Use the ODD for the telemarketer model in section 13.3.

1. Investigate the effect of allowing telemarketers to compete globally instead of locally, as described in Section 13.4, allowing telemarketing firms to merge, as described in Section 13.5, and providing customers with caller-id so they can tell who is calling, as described in section 13.6. Did you get the same results as the textbook reports?

2. All teams should do exercise 13.2. Different teams will be assigned different exercises from 13.3–13.8: Some teams will do exercises 13.3–13.5 while other teams will do exercises 13.6–13.8.