Complexity Economics and Agent-Based Models

Fall 2015

Instructor
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Structure of the module: five lectures, with related homeworks.

Goal: **to introduce the *making of* agent-based simulation models, comparing NetLogo and SLAPP**.

Suggested preliminary readings and activities:

1. a general introductory paper: Paul L. Borrill and Leigh S. Tesfatsion (2010), Agent-Based Modeling The Right Mathematics for the Social Sciences?, http://www.econ.iastate.edu/tesfatsi/ABMRightMath.PBLTWP.pdf;
2. if you do not know Python, have a look to it (being SLAPP built using that language), also to familiarize with the ideas of object oriented programming; a useful starting point is: Allen Downey (2013), Think Python - How to Think Like a Computer Scientist http://www.greenteapress.com/thinkpython/thinkpython.pdf; as an alternative, view the interactive book at http://interactivepython.org/runestone/static/thinkcspy/toc.html;
3. install Python (2.7.x; NOT 3.x.x) from www.python.org and (optional) IPython, from ipython.org;
4. familiarize with the IDLE programming environment, specific for Python and installed with Python;
5. download SLAPP (Swarm-Like Agent Protocol in Python), which is at https://github.com/terna/SLAPP (use the "Download ZIP" button);
6. start to familiarize with the structure of the SLAPP tutorial reported into the .txt files (included in the main folder and in its subfolders, from 1 to 6);
7. install NetLogo, from http://ccl.northwestern.edu/netlogo/ , version 5.2.x or newer;
8. have a look to the Tutorial contained into the installed NetLogo version.

Program

1st lecture - Introductory notes. Preliminary steps with NetLogo and Python.
Homework.

2nd lecture - initial exercises in NetLogo, with a parallel look at the content of the folders 1, 2 and 3 of SLAPP.

3rd lecture - exercises in NetLogo, with a deep parallelism with the content of the folders 4 and 5 of SLAPP.
Homework.

4th lecture - SLAPP, folders 6 (as an agent-based shell).
Homework.

5th lecture - from SLAPP to AESOP (Agents and Emergencies for Simulating Organizations in Python), and the perspectives of SLAPP-AESOP, with applications.
Pizza.

Schedule
Mon. Oct. 26th, 11am-1pm; Tue. Oct. 27th, 11am-1pm; Wed. Oct. 28th, 11am-1pm; Thu. Oct. 29th, 11am-1pm; Fri. Oct. 30th, 11am-1pm.