Agent-Based Modelling - Coursework 1
Systematic Experimentation – SugarScape

Set: **Monday 10 February**
Deadline: **Friday 07 March, 17:00**

Submission: Word or PDF document via Moodle

Late submission of this work will be subject to the standard penalties, according to UCL regulations.

Task

Consider the Netlogo Models Library models "Sugarscape 1 Immediate Growback", "Sugarscape 2 Constant Growback", and "Sugarscape 3 Wealth Distribution".

Choose at least two of these models, and use BehaviorSpace to perform systematic investigations of their behaviour as parameters are varied. This will require:

(a) choosing some aspect or aspects of the model behaviour to measure (e.g. final population, average vision, average metabolism, average wealth…) and potentially adding new reporters to the code (to-report … end) to calculate these metrics; and…

(b) choosing which parameters to alter and which values of those parameters to consider.

Present the results of your investigation in the form of a short report, with appropriate graphs and tables, and interpret these results to explain what has been learnt about the models' behaviour, including some comparison of the behaviour of at least two versions of Sugarscape.

Weighting

This assessment makes up 50% of the marks for CASA0011.

Length

1500 words + graphs/tables. *(Penalties for exceeding this limit will be in line with UCL regulations.)*

Assessment Criteria

See the assessment criteria for Coursework 1, provided separately.

Note that the very highest marks require consideration and understanding of the most complex model: "Sugarscape 3 Wealth Distribution"

Structure

Your report should contain the following sections:

- Aim – *Explain what aspects of the models' behaviour you intend to investigate.*
- Methods – *Clearly and completely detail the experiments that you performed.*
- Results – *Communicate the results of the experiments through graphs and tables.*
- Discussion – *Interpret your results and compare the different models.*
- Conclusion – *Summarise your main findings, relating back to your aims.*

Notes

- You are not expected to examine every possible value of every parameter. You should conduct experiments that can be comprehensively communicated within the 1500 words of this assignment.

- Any new reporters added to the code should be added to your report in an appendix. They will not be counted in the word limit.

- Graphs should never be copied and pasted from NetLogo. Instead the appropriate data should be exported to another piece of software (e.g. Excel) to create more attractive figures. This can be achieved by right clicking (or control-clicking, or similar) on a graph and selecting "Export…"

Originality and use of AI

- All written text in this submission must originate from you, through setting down your own ideas in your own words (supported by relevant quotations from properly cited sources, where appropriate). Text must not be produced by AI, copied from another source, or produced by any other individual.

- Any code written for the purposes of this submission should similarly be your own work, not produced by AI, or by any other individual.

- However, using any tools to check/correct/improve spelling, grammar and syntax (or indeed, asking another person to proofread your work for these purposes) is acceptable.

- Any other use of AI (e.g. generating ideas) is permissible.