

SECU0058 - Component 2 (70%) – 2800 words max

程序代写代做 CS编程辅导

The purpose of this component is to simulate pickpocketing events and explore the differences between independent and cooperative offending. In this exercise, ‘cooperative offending’ refers to the case where two offenders share information with each other (e.g., about past events and criminal opportunities) and make decisions together. With ‘independent offending’, pickpockets do not share information with each other, and they decide where to offend without consulting each other. In this exercise, you will be working with a base Netlogo code that generates a basic terrain with three paths that move along the paths.



TASKS

- 1) Read the instructions and familiarize yourself with the Netlogo code provided to you.
- 2) Build on the code to develop two pickpocketing models (A and B), as described below.
- 3) Write a report where you present the two pickpocketing models.
- 4) Run the two models using Netlogo’s behavioral space module and present the results of your simulation runs in your report.
- 5) Compare and discuss the results in your report.

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Assignment Project Exam Help

Submit your code (two Netlogo files, one per model), spreadsheets with results and report.

Important: Carefully read the marking criteria before working on this assessment component

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ABOUT THE TASKS

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Terrain

The code has a small street network with a patch (A) on the left of the screen, another patch (B) on the right of the screen and three straight paths linking A to B. Each patch has a level of natural surveillance. You can visualize it by using the switch button (display_option?) before pressing the set-up button.

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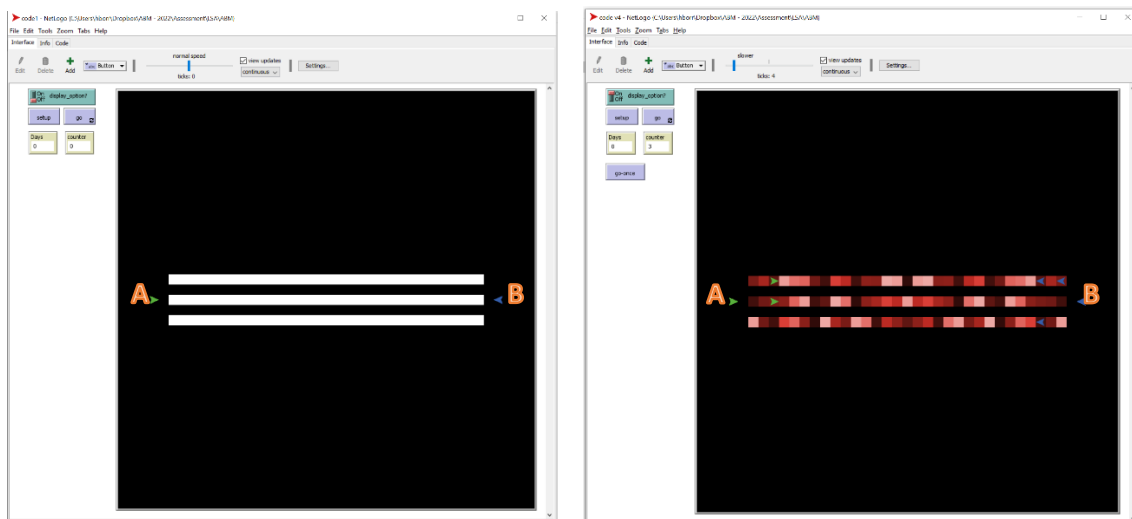


Figure 1: The left figure shows the three paths in white. The pedestrian agents initially stay on the patches A (left) and B (right). They then take one of the three paths to reach the other patch. As shown on the right figure, the level of natural surveillance (colour-coded in red) varies along the three paths, which means some patches are more criminogenic than others.

Pedestrians

Pedestrian agents have been created that walk along the three paths.

- Half of the pedestrians walk from A to B in the morning and return to A in the afternoon.
- The other half do from B.

Note: Look at the Net and when the agents start moving exactly.

Pickpockets

You will need to create let agents. Each day these agents must:

- select a suitable place (patch) to commit crime, and stay there for the whole day.

Note: The agents may try to estimate the natural surveillance level of each patch from experience, but they must not be given access to the information stored in the patches.

- i) select potential targets among pedestrians on the same patch and ii) try to steal their wallets.

Note: It would not be realistic for pickpockets to attack all pedestrians. Before coding this part of the model you are encouraged to draw upon the literature on target selection, especially as it relates to moving targets (e.g., pickpocketing or robbery).

Crime events

When a pickpocket attempts to steal a wallet, they either succeed or fail.

The outcome of these events should be determined using a stochastic process. As you have seen in the shoplifting example, a simple way to do this consists of randomly generating a number and comparing it with a given threshold.

Note: It would not be realistic to use the same threshold for all situations. The value is expected to vary based on:

- individual factors related to the offenders (e.g., capability level)
- individual factors related to the victims (e.g., vulnerability level)
- environmental factors related to the patches (e.g., natural surveillance level)

The outcome of previous events may influence the knowledge and behaviour of the agents. For example, you may want to write your code such that:

- When a pedestrian has their wallet stolen, they are less likely to use the same path in the future.
- After a successful attempt, a pickpocket is more likely to return to the same patch in the future.
- After a failed attempt, a pickpocket is less likely to return to the same patch in the future.

In this example, it could be hypothesized that cooperating offenders, i.e. offenders who *share information with each other* (e.g., about past events and criminal opportunities) and *take offending decisions together*, will be more successful than independent offenders.

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Experiments

The two models you will create should enable you to simulate and compare independent and cooperative offending in Tasks 4 and 5:

- Model A: The pickers offend independently. They do not share information about successes and failures before or after committing crime.
- Model B: The pickers offend cooperatively. They share information about successes and failures before committing crime.

Note: (1) You may want to consider rules to operationalize the sharing of information between agents. (2) Collaborators may decide to stay on the same or separate patches and paths.

Specify a number of outcome variables and use them to compare the two models. Possible options include, but are not limited to, the proportion of successful thefts and the proportion of unsuccessful thefts. You may consider the effect of changing the number of offenders or pedestrians in your experiment.

Structure of the report

- Introduction (~100 words)
- Conceptual model (~800 words)
- Implementation (Presentation of the NetLogo code) (~500 words)
- Simulation results and analysis (~500 words)
- Discussion (~800 words)
- Conclusion (~100 words)
- List of references
- Appendix

Marking criteria

- Introduction (relevance and pertinence, clarity in the purpose of the report and explanation of the structure of the report) [5 marks]
- Conceptual model (clarity, accuracy, and justification). There should be a good balance between complexity and ecological validity. Justification involves including supporting evidence from the relevant body of literature where appropriate (this is desirable for UG students - required for PG students) [20 marks]
- Implementation (including clarity and quality of the code, performance, level of complexity, and consistence with conceptual model and justification) [20 marks]
- Analysis (validity of the simulation experiment method, appropriateness of the outcome variables and quality, and clarity of the presentation of the method and results - including figures) [10 marks]
- Discussion (clarity of the presentation, ability to draw on the results to make insightful arguments based on background literature, and appreciation of the limits of the selected method). You should demonstrate that you are able to draw upon simulation results to make a point about the difference between independent offending and cooperative offending. [10 marks]
- Conclusions (clarity and pertinence of the recommendations) [5 marks]

For each section, the markers will also consider the quality of writing, including the organisation of the arguments, typographical errors, adequate use of technical words, etc.

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Recommendations: When developing agent-based models, students are often overly ambitious and they end up being overwhelmed by the scale and complexity of the task. In light of this, we strongly recommend you to 'keep it simple' and use an iterative approach to perform this task:

- Start by creating a simple model and generate simulation results with it. Save the first version of the model and your notes about the results.
- If you still have time, select the next area of improvement on your list and proceed as explained above.



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