GeoInformatics · Final Project - Draft Version, Subject to change

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1 Model extension

The final project builds on the work you have completed during the practicals. Another 'clean' version of the model is given, including most of the elements seen so far, is given to ensure everyone starts on the same ground. This model includes a river, which may flood. The river is likely to influence agent's location preferences, and it should also influence the planning decisions made within the CA (e.g. planners may be more reluctant to release land on the flood plain). You should make an addition to the model, which may either be:

- add a named feature to the model which will influence the agent's location preferences, preferably based on literature defining an equation or qualitative assessment of a real aspect of the modelled system. For example, you might want to consider the effect of an airport on people's location choice.
- split the agents into two types, with different location preferences. Here you should be able to explain what the two types are, and *why* their location preferences are different, again using examples from the literature where possible.

Be creative - as long as you can defend your choice, it is acceptable. You shouldn't have to do much in the way of programming here - it is mostly about the design of the location functions for the agents and the rules for the release of land. You should explore and explain the effects of your modification.

2 Scenario Based Analysis

Now you should perform a scenario-based analysis of the model. Taking the given parameters and your location/planning functions as a baseline, derive parameter values for each of the scenarios. You should make sure that the scenarios affect the planning rules in the CA (at least the release of empty land) and they may affect location preferences. In addition, one of the model outputs is the number of houses in the floodplain. Perform a 'risk of flooding' analysis for houses in each scenario, using risks given in each scenario for both the 100 and 50 year flood plains.

3 Writeup

The report (60% of final mark) should follow a scientific paper format. This means four main sections: (1) introduction, (2) methods, (3) results, and (4) discussion and conclusions. The length of the text should not exceed 4000 words, excluding references and figure captions - please include the wordcount at the top of your submission. The introduction should include a description of relevant literature that your extension is based upon. In the method section, describe in general what each of the main parameters do, then focus on how your extension works and how it interacts with these parameters. Don't forget to describe the parameter variations across scenarios. The results and discussion sections, where you explore the implications of your changes, should be the largest. Don't forget to consider things presented in the lectures, e.g. calibration, validation, and verification, and please use academic writing style and Harvard referencing.

Submission is due by 4^{th} of March 2009, noon, through WebCT.

4 Programming Hints

- Generally, scenario dependent parameters can be set using model.score. However, if you want to add a new parameter you have two choices:
  - alter it in the java code by hand and restart the model for each scenario
  - add a parameter in model.score, and add it to the list of parameters being set in CombinedModel, in the same way as other parameters are done.
- Features can be added in the initialisation phase of City
- Floodplain avoidance can be done in the cell transition rules in Cell.
- If you want to figure out what is going on in your model, you can use the information tool on the displays to get info about each cell.