Using The MEME Tool to Set Up NetLogo Experiments: Demo Notes

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1 Using The MEME Tool to Set Up NetLogo Experiments: Demo Notes

This document contains notes for the MEME-NetLogo demo video, which is available at http://mass.aitia.ai/screenshots/79-meme-videos.

In the following we provide notes for the demo in which the Sitsim model (http://ccl.northwestern.edu/netlogo/models/community/Sitsim) is used in a simple parameter sweep experiment. The demo starts from downloading the model from the NetLogo community models and ends when the simulation results are visualized.

1.1 Preparing NetLogo Models

The current version of MEME supports NetLogo v.4.0.4. Models written using earlier versions of NetLogo should be 'converted' to v.4.0.4. This conversion is automatically executed by NetLogo itself, when saving an opened model.

1.2 Starting the Parameter Sweep Wizard

On the first page of the Parameter Sweep Wizard select the NetLogo platform. On the second page specify the .nlogo model file (please make sure that it's a version 4.0.4. model), and then click 'Next'.

1.3 Setting up the Experiment

The 'Method Selection' page lists the available sweeping methods that you can choose from.

By selecting the manual method, the parameter full space the model is going to be run on can be defined on the next page of the wizard. After pressing the Edit button (or double click on the parameter in the tree) the settings of the selected parameter can be defined in the left panel. The parameter combinations are represented by a tree. If a parameter is "under" an other, it means that its values will be set for all defined values of the "parent" parameter (nested loops). Parameters can be moved "under" one another in the tree by dragging and dropping them.

1.4 Prepare the Data Recorder

In this example stop condition specifies the (maximal) time step at which runs will be stopped (see the MEME Manual for other stop condition options at http://mass.aitia.ai).

A recorder is created first, then 'blacks' and 'whites' from the 'Variables' list are added to it, causing these variables to be recorded at the end of the runs. The simulation starts when the 'Finish' button is pressed.

1.5 Monitoring the Simulation

The monitor panel displays some basic information about the running model and simulation progress.

1.6 Import Data

MEME organizes simulation results in a 3-level hierarchy. Every simulation result belongs to a particular version of a particular model. Here the "version" and "model" are names entered by the user. These are the first two levels of the hierarchy. The third level holds batches. Usually a batch of runs is performed at once, generating a batch of simulation results; therefore every simulation result belongs to a batch, too. Batches are identified by numbers that are incremented automatically by MEME.

The 'NetLogo Import Settings' dialog asks for the name of the model and version this result belongs to.

1.7 Create a view of derived data

The “views” are computed tables that are assembled from raw simulation data.

To create a view, at least one batch in the Results browser must be selected. The new view table will be created from the data contained in the selected results.

Columns can be added to the view table by pressing the ‘Add’ button on the ‘Create View Wizard’. Custom expressions or scripts (Beanshell) can be defined to combine the results in a more complex way than the ones included in the program by default (e.g. ‘Math.abs(col1-col2)’).

1.8 Create a Statistical View

View tables can be created from existing view tables too by choosing the source tables on the view panel and pressing ‘Create Views’.

Once a column is selected you can have simple Aggregative operations (Min, Max, Average, Sum, Count) done on it.

1.9 Create a Chart

MEME allows creating charts from view tables. After selecting the chart type, you can specify the data sources to be displayed. After setting the chart-dependent parameters, charts pop up when the ‘Display’ button is pressed.