Calibration of a Density-based Model of Urban Morphogenesis

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Abstract

This protocol describes the study of a computational model of urban growth, including real data processing, model exploration and calibration. See github repository for code and paper for real and simulation datasets.

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Protocol

Compute indicators on real data

Step 1.

Morphological indicators are computed on spatial windows using a parallelized R script.

Test and validate model implementations

Step 2.

Using the NetLogo implementation, refine reasonable parameter boundaries and validate visually both implementations.

Validate statistical behavior of the model

Step 3.

First exploration, 81 points in the parameter space with 100 repetitions each, to obtain convergence properties of indicators.

Exploration and sensitivity analysis

Step 4.

LHS exploration of model parameter space.

Calibration

Step 5.

Compare real morphological indicators with the one produced during the exploration of the model, projected in a 2D principal plane.