

GAMA

1.6.1

A spatially explicit multi-scale agent-based simulation platform



©2007-2014 IRD UMMISCO & Partners

<http://gama-platform.googlecode.com>

Aitor Alkorta

Qué es?



gama-platform

Agent-based, spatially explicit, modeling and simulation platform

- Una plataforma de modelado y simulación, espacialmente explícita, basada en agentes.
- GAML agent-oriented language (Java/Smalltalk)
- Crear instancias de los agentes de cualquier tipo de datos y simulaciones a gran escala.
- Visualización 2D/3D

Donde?

- Desarrollado por varios equipos de la unidad de investigación internacional UMMISCO del IRD/UPMC
- Año: 2007
- 1.6.1
- Activo



The image shows a screenshot of the IRD website. At the top left, there is the IRD logo (a blue rectangle with white horizontal lines) and the text "Institut de recherche pour le développement". Below this, there are three main images: a person carrying a large pot on their head, a herd of cattle in a field, and a winding river in a landscape. To the right of these images is a search bar with the text "Búsqueda en todo el sitio:". Below the images and search bar is a navigation menu with four orange buttons: "El IRD", "La investigación", "Asociaciones", and "El IRD en el mundo". Below the navigation menu is a paragraph of text in Spanish.

El IRD, organismo de investigación original y único en el panorama europeo de la investigación para el desarrollo, tiene como vocación realizar investigaciones en el Sur, para el Sur y con el Sur.

Sus investigadores intervienen en los grandes retos mundiales de actualidad: calentamiento climático, enfermedades emergentes, biodiversidad, acceso al agua, migraciones, pobreza, hambre en el mundo y contribuyen a través de la formación a reforzar las comunidades científicas del Sur y a la innovación.

Instalación

- Muy sencillo.
- Basado en eclipse
- Tutorial
- Multiplataforma

The screenshot displays the GAMA software interface. On the left, there is a 'Models library' pane with categories like Features, Syntax, Toy Models, Tutorials, Shared models, and User models. Below it is an 'Outline' pane that is currently empty. The main window shows a web browser view of a tutorial page titled 'Tutorial__StupidTutorialModel1_step1'. The page content includes an overview of the '1. Basic Model' and a 'Formulation' section. The status bar at the bottom indicates '0 items selected' and '79M of 362M'.

File Edit Search Project Views Help

No simulation running

Gama Project

Models library (4)

- Features
- Syntax
- Toy Models
- Tutorials
- Shared models (0)
- User models (0)

Outline

An outline is not available.

Project Home Downloads Wiki Issues Source

Search Current pages for Search

Tutorial__StupidTutorialModel1_step1
presentation of step 1 of the stupid model tutorial: definition of the basic model
Updated Jul 27, 2014 by edamour...@gmail.com

1. Basic Model

This is the basic Stupid Model, an extremely simple agent-based model used as a starting point for learning GAMA (or other ABM platforms).

- 1. Basic Model
 - Formulation
 - Model Definition
 - the grid environment
 - bug agent definition
 - instantiating bugs
 - display output
 - Nota bene
 - Complete Model

Formulation

- The space is a two-dimensional grid of dimensions 100 x 100. The space is toroidal, meaning that if bugs move off one edge of the grid they appear on the opposite edge.
- 100 bug agents are created. They have one behavior: moving to a randomly chosen grid location within +/- 4 cells of their current location, in both the X and Y directions. If there already is a bug at the location (including the moving bug itself—bugs are not allowed to stay at their current location unless none of the neighborhood cells are vacant) then another new location is chosen. This action is executed once per

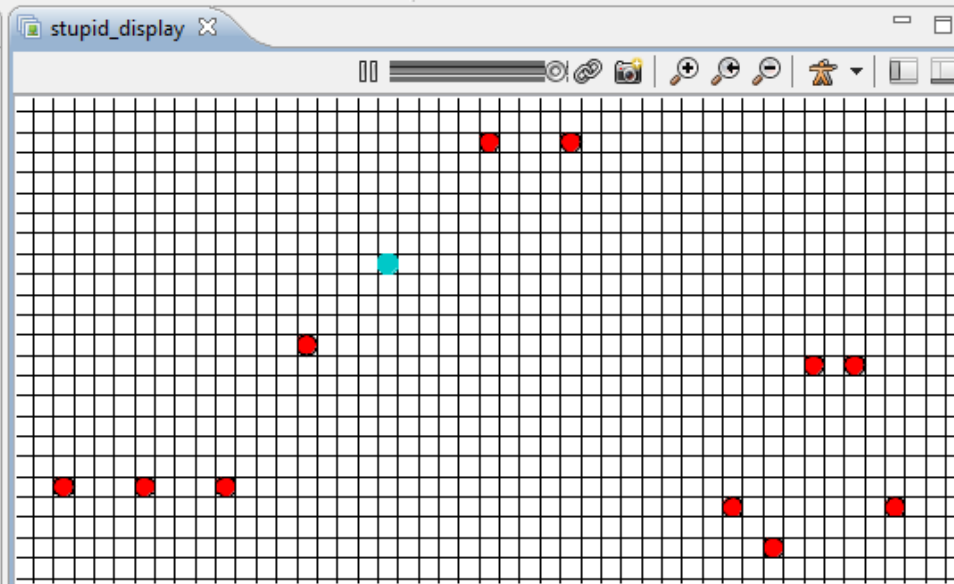
0 items selected 79M of 362M

7 cycles elapsed

Gama Projects

- Road Traffic
- Stupid Model
 - data
 - models
 - result.csv
 - Stupid Model 01.gaml
 - Stupid Model 02.gaml
 - Stupid Model 03.gaml
 - Stupid Model 04.gaml
 - Stupid Model 05.gaml
 - Stupid Model 06.gaml
 - Stupid Model 07.gaml
 - Stupid Model 08.gaml
 - Stupid Model 09.gaml
 - Stupid Model 10.gaml
 - Stupid Model 11.gaml
 - Stupid Model 12.gaml
 - Stupid Model 13.gaml
 - Stupid Model 14.gaml
 - Stupid Model 15.gaml
 - Stupid Model 16.gaml
- Shared models (0)
- User models (0)

Console



GAMA Stupid Model 01.gaml

Run: Experiment stupidModel

In project: v

```

1 model StupidModel1
2
3 global torus: true{
4   init {
5     create bug number: 100 {
6       my_place <- one_of(cell);
7       location <- my_place.location;
8     }
9   }
10 }
11
12 grid cell width: 100 height: 100 neighbours: 4 {
13   list(cells, neighbours <- self.neighbours at 4:

```

Parameters

Model StupidModel1_model Parameters for experiment 'stupidModel'

Random number generator 'mersenne' among [cellular, xor, java, mersenne]

Random seed Define: 0.0

Agent Inspector

Agent bug79

name 'bug79'

host StupidModel1_model0

shape {59.5,27.5,0.0} as geometry

location x 54.5 y 23.5 z 0.0

my_place cell2354

highlight true

128M of 361M

```
1 model StupidModel1
2
3 global torus: true{
4   init {
5     create bug number: 100 {
6       my_place <- one_of(cell);
7       location <- my_place.location;
8     }
9   }
10 }
11
12 grid cell width: 100 height: 100 neighbours: 4 {
13   list<cell> neighbours4 <- self neighbours_at 4;
14 }
15
16 species bug {
17   cell my_place;
18   reflex basic_move {
19     cell destination <- shuffle(my_place.neighbours4) first_with empty(each.agents);
20     if (destination != nil) {
21       my_place <- destination;
22       location <- destination.location;
23     }
24   }
25   aspect basic {
26     draw circle(0.5) color: #red;
27   }
28 }
29 }
30
31 experiment stupidModel type: gui {
32   output {
```

Conclusiones

- Actualizado
- Complejo
- No muchos usuarios
- Multiplataforma

Links

External links

[Youtube](#)
[Facebook](#)

Groups

[Users group](#)
[Developers group](#)

GAMA is developed by several teams under the umbrella of the IRD/UPMC international research unit [UMMISCO](#):

- [MSI Research Team](#), Vietnam National University, Hanoi, Vietnam (2007 – 2014)
- [UMR 6228 IDEES](#), CNRS/University of Rouen, France (2010 – 2014)
- [UMR 5505 IRIT](#), CNRS/University of Toulouse 1, France (2010 – 2014)
- [DREAM Research Team](#), University of Can Tho, Vietnam (2011 – 2014)
- [UMR 8623 LRI](#), CNRS/University Paris-Sud, France (2011 - 2014)

Recent activity

[Revision 11718: fix a bug concerning the advanced driving skill.](#)

de patrick.taillandier - 15 Oct 2014

Changed Paths: ...

[Revision 11717: \[No log message\]](#)

de alexis.drogoul - 12 Oct 2014

Changed Paths: Modify /branches/GAMA_CURRENT/msi.gama.ext/images/splash.png [No log message]

[Revision 11713: Add a new operator to create explicit geometry collections and fix a bug concern](#)

de patrick.taillandier - 10 Oct 2014

Changed Paths: Modify /branches/GAMA_CURRENT/msi.gama.core/.settings/org.eclipse.jdt.launching.prefs ...

[Revision 11711: add a new replace operator for string](#)

de patrick.taillandier - 08 Oct 2014

Changed Paths: Modify /branches/GAMA_CURRENT/msi.gama.core/src/msi/gaml/operators/Strings.java add a new replace ...

[Revision 11710: remove get_URL_content, this feature exist in URL_file, by accessing its content](#)

de hqngghi88 - 06 Oct 2014

Changed Paths: Modify /branches/GAMA_CURRENT/msi.gama.core/src/msi/gaml/operators/Files.java remove ...

[Revision 11709: add get_URL_content operator, get contents of URL as String](#)

de hqngghi88 - 04 Oct 2014

Changed Paths: Modify /branches/GAMA_CURRENT/msi.gama.core/src/msi/gaml/operators/Files.java add get_URL_content ...

[Revision 11708: 1. SocketSkill - communicate online through socket TCP/IP 2. URLFile - read file](#)

Preguntas?

Aitor Alkorta