

Técnicas Avanzadas de Inteligencia Artificial

Curso 2016-2017

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Grado en Ingeniería en Informática

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Objetivos

- Agentes Inteligentes
- Sistemas Multi-agentes
- Desarrollar sistemas basados en agentes
 - Laboratorios:
 - JADE (Java Agent DEvelopment Framework)
 - JASON (Java version of AgentSpeak)
 - Práctica:
 - JGOMAS (Game Oriented Multiagent System based on JADE/JASON)
- Planificación
- Introducción a la investigación en IA

Temario

- Agentes Inteligentes
- Sistemas Multiagentes
- Planificación

Publicaciones científicas

- International Conference on Autonomous Agents and Multiagent Systems (AAMAS)
<http://www.aamas-conference.org>
- Journal on Autonomous Agents and Multi-Agent Systems
ISSN: 1387-2532
- Eventos científicos de otros campos, sobre todo inteligencia artificial (IJCAI, AAI, ECAI)

Bibliografía

- S. Russell, P. Norvig. Artificial Intelligence. (3rd. ed.). Pearson, 2010.
- Nils Nilsson. Artificial intelligence: a new synthesis. San Francisco, California : Morgan Kaufmann, 1998
- Elaine Rich and Kevin Knight. Inteligencia Artificial. McGraw-Hill, Inc., 1994. Segunda edición
- Agentes software y sistemas multiagente: Conceptos, Arquitecturas y Aplicaciones. Juan Pavón y José L. Pérez, Pearson 2004
- M. Wooldridge. An Introduction to Multiagent Systems. 2nd Edition, John Wiley, 2009.
- G. Weiss, editor. Multiagent Systems - A Modern Approach to Distributed Artificial Intelligence. The MIT Press, 1999.
- Y. Shoham and K. Leyton-Brown, Multiagent Systems: Algorithmic, Game-theoretic, and Logical Foundations. Cambridge University Press, 2009.
- Automated Planning: Theory and Practice. M. Ghallab, D. S. Nau & p. Traverso. Morgan Kaufmann Publisher, 2004.

Evaluación

- Presentación: 10%
- Tarea individual: 20%
- Tarea en pareja: 30%
- Práctica: 40%

El Proyecto

- El proyecto lo realiza un equipo de 3 personas
- Tiene un peso del 40% de la nota final.

- JASON (Java version of AgentSpeak)
- JGOMAS (Game Oriented Multiagent System based on Jade)
 - JGOMAS is an environment to develop and to run intelligent agents over simulated 3D worlds.

La motivación

- (Huhns & Singh 1994) ... “creating a system that interconnects separately developed collaborative agents, thus enabling the ensemble to function beyond the capabilities of any of its members”.
- $\text{value}(\sum \text{agent}_i) > \max(\text{value}(\text{agent}_i))$

La motivación

- The RoboCup Soccer simulator
 - <http://sourceforge.net/projects/sserver>
- RoboCup
 - <http://www.robocup.org>
- Agents on Mars (Multi-agents contest)
 - <http://multiagentcontest.org>
- JGOMAS
 - <http://gti-ia.dsic.upv.es/sma/tools/jgomas/index.php>

Técnicas Avanzadas de Inteligencia Artificial

The image displays a multi-windowed software interface for JGOMAS. The top-left window, titled "jgomas.bat", shows a series of log messages from a Manager and various agents (A1 through A6) beginning fights. The central window is the "JADE Remote Agent Management GUI", which features a menu bar, a toolbar, and a tree view of "AgentPlatforms". The tree view shows a "Main-Container" with a list of agents including A3, E9, RMA, ams, A6, E6, E5, ObjectivePack, A5, A1, A4, A2, df, Manager, MedicPack_51, and MedicPack_71. To the right of the tree is a table with columns for name, addresses, state, and owner. The bottom-right window is the "JGomas Viewer", showing a 3D perspective view of a game environment with a yellow ground, a maze-like structure, and several small robot-like characters. A smaller "JGomas Viewer" window is also visible in the center.

```
Manager[12]: Sending notification to fight to: A5
[A1@pandemonium:1099/JADE]: Beginning to fight
Manager[13]: Sending notification to fight to: A1
[E10@pandemonium:1099/JADE]: Beginning to fight
Manager[14]: Sending notification to fight to: E10
[A4@pandemonium:1099/JADE]: Beginning to fight
Manager[15]: Sending notification to fight to: A4
[A2@pandemonium:1099/JADE]: Beginning to fight
Manager[16]: Sending notification to fight to: A2
Manager: Sending Objective notification to agents
Register...
```

name	addresses	state	owner
NAME	ADDRESSES	STATE	OWNER

La motivación

- IA y el mercado de valores
 - <http://www.financialsense.com/contributors/cris-sheridan/is-artificial-intelligence-taking-over-the-stock-market>
- Sentiment Analysis for stock market prediction
 - <http://gnip.com/twitter>
 - <http://datasift.com>
 - <http://topsy.com>
- ...

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