

Técnicas Avanzadas de Inteligencia Artificial

Curso 2013-2014

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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)
 - Práctica:
 - JGOMAS (Game Oriented Multiagent System based on JADE)
- 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

- Ejercicios: 30%
- Presentación: 30%
- Práctica: 40%

El Proyecto

- El proyecto lo realiza un equipo de 2 personas
- Tiene un peso del 40% de la nota final.

- JADE (Java Agent DEvelopment Framework)
- 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>

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The image displays a multi-windowed software interface for JGOMAS (JADE Remote Agent Management System). The windows include:

- Terminal (jgomas.bat):** Shows log messages from various managers (A1-A6, E10-E18, Manager) sending notifications to fight and beginning fights.
- JADE Remote Agent Management GUI (RMA@pandemonium:1099/JADE):** A graphical interface with a menu bar (File, Actions, Tools, Remote Platforms, Help) and a tree view of agent platforms. The tree shows a hierarchy: AgentPlatforms > *pandemonium: 1099/JADE* > Main-Container > A3@pandemonium: 1099/JADE, E9@pandemonium: 1099/JADE, RMA@pandemonium: 1099/JADE, ams@pandemonium: 1099/JADE, A6@pandemonium: 1099/JADE, E6@pandemonium: 1099/JADE, E5@pandemonium: 1099/JADE, ObjectivePack@pandemonium, A5@pandemonium: 1099/JADE, A1@pandemonium: 1099/JADE, A4@pandemonium: 1099/JADE, A2@pandemonium: 1099/JADE, df@pandemonium: 1099/JADE, Manager@pandemonium: 1099/JADE, MedicPack_51@pandemonium, and MedicPack_71@pandemonium.
- Render Engine for JGOMAS:** A dialog box for connection settings. It has tabs for "Connection Dialog" and "Viewer". The "Server" field contains "localhost" and the "Port" field contains "9001". There are "Init" and "End" buttons. The status at the bottom is "Not connected".
- JGomas Viewer:** A 3D game engine window showing a top-down view of a maze-like environment with a yellow floor and brown walls. Several small, grey, humanoid-like agents are visible on the map.

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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