

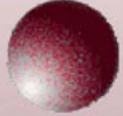
MAS-SOC: a SocSim Platform Based on Agent-Oriented Programming

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Summary

- MAS-SOC
 - Agent-Speak - *Jason*
 - Communication - SACI
 - Environments - ELMS
 - Current & Future Works



MAS-SOC

- Multi-Agent Simulation for the SOCial sciences
- Objective:
 - To provide a framework that allows the creation of multi-agent simulation without extensive programming skills;
- Modules
 - *Jason*: AgentSpeak (Hübner & Bordini, 2003)
 - ELMS: Environment Description (Okuyama, 2003)
 - SACI: Communication (Hübner, 2000)
 - Simulation Manager: GUI (under development)

AgentSpeak

- Definition of agents using BDI concepts
- Proposed by Rao(1996)
- Well Defined Operational Semantics (Bordini, et al. 2004)
- The Agent is defined simply by means of:
 - Beliefs
 - Plans

Jason

- Interpreter for an extended version of AgentSpeak
- Open-Source
- Very Extensible and Customisable
- Debugging tools
- Infrastructure (SACI) allows to:
 - run distributed
 - use of speech acts

ELMS

- Context: SocSim implies situated MAS
- Environment Language for Multi-agent Simulation
- Provides the means for the definition of quite complex environments
 - Dynamic, Partially observable, Sequential, Stochastic, and Discrete (mainly)



ELMS

- Concepts used to define Agents:
 - Agent Bodies
 - Attributes; Actions; Perceptions; Constructor;
 - Agent Sensorial Capacities (Perceptions)
 - Pre-conditions; Attributes of the environment
 - Agent Effective Capacities (Actions)
 - Pre-conditions; Values assignments; objects

ELMS

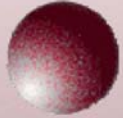
- Concepts to define the Environment
 - Objects (Resources)
 - Attributes; Reactions; Constructor;
 - Spatial Representation (Grid)
 - Cells
 - Attributes; Reactions;
- Operational Concepts:
 - Observables (list of environments attributes)

Current Work

- Explicit Organisational Model
 - Electronic institutions
 - Study the emergence of organisational structures
 - Norms
 - Interactions models

Future Work

- Ontologies
 - For simulation specification
 - Within agents' reasoning
- Develop more simulations/applications



Thank You

Bordini, Rafael H., Costa, Antônio Carlos da Rocha, Hübner, Jomi F., Moreira, Álvaro F., Okuyama, Fabio Y. and Vieira, Renata (2005). 'MAS-SOC: a Social Simulation Platform Based on Agent-Oriented Programming'. *Journal of Artificial Societies and Social Simulation* 8(3)
<<http://jasss.soc.surrey.ac.uk/8/3/7.html>>.

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