

Call For Papers

Journal of Simulation

Special Issue: Agent Based Modeling: Theory and Applications

Special Issue Editor

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Introduction

Agent-based models (ABMs), also sometimes called agent distillations or cellular automata models, have found tremendous success in an especially wide spectrum of applications. Such models have also been used in financial modeling, personnel modeling, in military applications such as examining the impacts of tactical airpower or logistical supply, in social science modeling and even in a variety of manufacturing applications. Multiagent systems (MAS) are a special kind of ABM in which a group of systems or entities interact with each other and their environment. An agent in a MAS can represent a human, group of humans, a machine or a software system with the capability to perceive their environment, react to changes in the environment and affect the environment with their own actions.

In an ABM, entities are constructed to have specified goals or actions. Agents can control their own destiny which means they may change their internal state depending on their knowledge of the artificial environment in which they reside and function. This cognitive capability of the agents is necessary so agents can achieve the specified goal or criterion within the context of the application. The agents are usually modeled in an object-oriented manner but suitably extended to include representation of their knowledge and roles within an environment. Thus, an agent can have knowledge of itself, knowledge received from other agents through communication and sensory channels, knowledge based on perceptions of its environment, and even memory of previous states the agent found itself. Among the challenges to ABM are designing these agents to encapsulate this information in such a way that the knowledge is controlled and exploited by the software agent, ensuring the ABM realistically captures the actual system of interest, and analyzing the emergent behavior that often arises in the use of these models.

This special issue is devoted to examining the developmental and validation methodologies associated with ABM, the development and characterizing of ABMs in novel applications, and the methodologies by which ABM results are analyzed and exploited for informed decision making.

Topics of interest to the special issue include, but are not limited to, the following:

- Applications of ABM and a discussion of the impact of the ABM use;
- Validation and verification of ABMs;
- Developmental methodologies for abstracting system information and realizing the computational ABM;
- Statistical and non-statistical analysis of ABM results to include issues associated with emergent behavior;
- Applications of ABM in virtual environments, training, and to some extent gaming associated with training;
- The design of large scale experiments involving ABMs and the analysis of the data resulting from completion of such experiments.

Submission and Review Process

Papers submitted to this special issue should be original and must not be under review elsewhere. Papers will be peer-reviewed in the same manner as other submissions to The Journal of Simulation. Full author instructions can be found at http://www.palgrave-journals.com/jos/author_instructions.html. Papers must be submitted electronically via the Operational Research Society's website at www.orsoc.org.uk (please indicate that the paper is intended for this special issue in the "explanation of contribution").

Important Dates

Submission date March 1st, 2009

Notification of acceptance/rejection July 1st 2009

For questions contact the special issue editor at:

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