The First CLIMA Contest
a special event of CLIMA VI, the Sixth International Workshop on
Computational Logics in Multi-Agent Systems

City University, London, UK, June 27-29, 2005

http://clima.deis.unibo.it/contest.html

SUBMISSIONS OPEN UNTIL MAY 20, 2005

Multi-agent systems are beginning to play an important role in today's software development.

This competition is an attempt to stimulate research in the area of multi-agent systems by **identifying key problems** and **collecting suitable benchmarks** that can serve as milestones for testing new approaches and techniques from computational logics. While there exist several competitions in various parts of artificial intelligence (theorem proving, planning, robo-cup etc) and, lately, also in specialised areas in agent systems (trading agents), the emphasis of this contest is on the use of 'computational logic' in (multi-) agent systems.

We expect to **promote the development of multi-agent systems** by first identifying difficult problems and then finding solutions by comparing different approaches from computational logic for solving them. While this idea seems very appealing, it is not an easy task to come up with a particular scenario that serves as a basis for a contest. Such a scenario should be generic enough to be applicable for a wide range of techniques of computational logic, but it should also be precise enough so that different approaches can be tested and compared against each other.

Scenario description This competition is organised as part of CLIMA and consists of developing multi-agent systems to solve a cooperative task in a dynamically changing environment. The environment of the multi-agent system is a grid-like world where agents can move from one slot to a neighbouring slot if there is no agent already in that slot. In this environment, food can appear in all but one of these slots. The special slot, in which no food can appear, is considered as a depot where the agents can bring and collect their food. An agent can observe if there is food in the slot it is currently visiting. Initially, food can be placed in some randomly selected slots. During the execution, additional food can appear dynamically in randomly selected slots except the depot slot. The agents may have/play different roles (such as explorer or collector), communicate and cooperate in order to find and collect food in an efficient and effective way. We encourage submissions that specify and design a multi-agent system in terms of high-level concepts such as goals, beliefs, plans, roles, communication, coordination, negotiation, and dialogue in order to generate an efficient and effective solution for the above mentioned application. Moreover, the multi-agent system implementations should be based on computational logic techniques (e.g. logic programming, formal calculi, etc) and they should reflect their design in a direct and intuitive way.

The challenge of this competition is thus to use computational logic techniques to provide implemented models for the abstract concepts that are used in the specification and design of multi-agent systems. These implemented models should be integrated to implement the above-mentioned application intuitively, directly, and effectively.

Submission format A submission consists of two parts. The **first part** is a description of analysis, design and implementation of a multi-agent system for the above application. Existing multi-agent system methodologies such as Gaia, Prometheus and Tropos can be used (not demanded) to describe the analysis and design of the system. For the description of the implementation, it should be explained how the design is implemented. This can be done by explaining, for example, which computational logic techniques are used to implement certain aspects of the multi-agent system (including issues related to individual agents). The maximum length of this description is 5 pages according to the LNCS format.

The **second part** is an (executable) implementation of the application. We do not demand any particular way (data format, algorithm, mechanism) to implement the system as long as it is implemented as a multi-agent system and as long as the environment is a 20x20 grid. Moreover, it should be possible to configure the initial state of the environment to place food in arbitrary slots. During the execution food should appear automatically every 20 seconds in a randomly selected slot. The multi-agent system will be run with 4 agents that are positioned initially at the corners of the grid. The implementation should be executable on a windows or linux machine.

How To Submit Please follow the links on the CLIMA web site to register and submit the 5 page description of your solution. You can then submit the implementation by e-mail (to the CLIMA Contest Chairs) or by specifying in your paper a URL where the implementation can be downloaded from. In the registration, please select 'Competition' in the paper type (tracks) drop-down menu.

Winning Criteria The criteria that will be used to evaluate submission and to select the first three winners are as follows:

1. Original, innovative, and effective application of computational logic techniques in solving specific multi-agent issues identified in this application.

2. The performance of the executable implementation. The performance of the executable implementation will be measured based on the amount of food that is collected by the multi-agent system in a certain period of time. All programs will be run on the same machine (Windows/Linux double boot machine).

3. The quality of the description of analysis, design and implementation of the multi-agent system, the elegance of its design and implementation, and the ease of installation and execution of the program.

Organisation The First CLIMA Contest is organised by **Jürgen Dix**, Technical University of Clausthal, and **Mehdi Dastani**, Utrecht University

Evaluation Committee

Marco Alberti, University of Ferrara, Italy
Federico Chesani, University of Bologna, Italy
Mehdi Dastani, Utrecht University, The Netherlands (chair)
Jürgen Dix, Technical University of Clausthal, Germany (chair)
Marco Gavanelli, University of Ferrara, Italy
Kostas Stathis, City University London, UK
Francesca Toni, Imperial College London, UK
Paolo Torroni, University of Bologna, Italy

Important Dates (no extensions)

◇ **Submission: May 20, 2005**
♡ Notification: May 27, 2005
♣ Camera-Ready: June 6, 2005

Prize There will be a prize for the winner (to be announced at the workshop). A selection of teams will be invited to extend their description for publication in the post-proceedings.