The Agent Contest Competition

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Introduction
Aim

- stimulate research in the area of multi-agent systems
- identifying key problems
- collecting suitable benchmarks that can serve as milestones for evaluating new tools, models, and techniques

**Challenge:** solve a cooperative task in a dynamically changing environment.
History
1st: The First CLIMA Contest – 2005

Scenario:
- grid-like world
- food and depot
- goal: collect and store food

Competition:
- 4 participants
2nd: The Second CLIMA Contest – 2006

**Scenario:**
- grid-like world
- gold and depot
- goal: collect and store gold

**Competition:**
- internet based environment provided by the organizers
- 3 participants
3rd: Multi-Agent Programming Contest in Association with ProMAS – 2007

**Competition:**
- slight changes in the environment
- 6 participants
4th: Multi-Agent Programming Contest in Association with ProMAS – 2008

Scenario and Submission:
- new scenario

Competition:
- 7 participants
Agent Contest 2008
Scenario: Cows and Cowboys

**Task:** implement a team of agents that collects more cows than the opponent

**Aim:** agents have to cooperate and coordinate their actions
Environment

- Cows
- Cowboys
- Corrals
- Obstacles
What is the optimal solution?
What is the optimal solution?

We do not know!
Details

**Discrete Simulation:** in each step do
- send perceptions to agents
- wait for agents’ actions or timeout
- let agents act and move cows

**Tournament Structure:**
- maximum step duration around 4 seconds
- approx. 1000 steps per simulation
- 3 simulations = 1 match
- each team plays against all others, 1 match per pair
Agents

- fixed visibility range (square)
- actions: move to one of eight directions
Cows

- visibility range (square)
- afraid of: agents, obstacles
- feel good: near other cows and empty spaces
- actions: move to one of eight directions
- slower than agents
Map: Razoredge
Map: Razoredge
Map: Cowskullmountain
Map: Cowskullmountain
## Results

<table>
<thead>
<tr>
<th>Rank</th>
<th>Team</th>
<th>CowScore</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>JIAC-TNG team</td>
<td>643</td>
<td>64</td>
</tr>
<tr>
<td>2.</td>
<td>Jadex</td>
<td>542</td>
<td>42</td>
</tr>
<tr>
<td>3.</td>
<td>SHABaN</td>
<td>373</td>
<td>37</td>
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<tr>
<td>4.</td>
<td>krzaczory</td>
<td>379</td>
<td>26</td>
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<td>5.</td>
<td>Jason</td>
<td>393</td>
<td>21</td>
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<tr>
<td>6.</td>
<td>bogtrotters</td>
<td>305</td>
<td>13</td>
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<tr>
<td>7.</td>
<td>KANGAL</td>
<td>32</td>
<td>1</td>
</tr>
</tbody>
</table>
Results

- observation: more formal approaches to system analysis and design (4 teams with state of the art methodology)
- roles: herders and explorers in almost all teams, differences in coordination, organisation and role-assignment
- two groups: decentralised and centralized approaches
- agent navigation: A* is employed by more and more teams
- MAS recovery monitoring mechanisms
- "bad" strategies
Contest Details
How does the contest work?

1. call for participation
2. documents: scenario and protocol description
3. preproceedings
4. release of the software
5. testing phase
6. the tournament
7. postproceedings
MASSim-Server

- **Visualization**: SVGs, complete simulations
- **Scenario**: replaceable plugin
- **Simulation algorithm**: tournament schedule
- **Web interface**: real-time monitor
Contest Details

Download

http://cig.in.tu-clausthal.de/agentcontest2008

- packages: server, agent-templates
- can be used in courses
Toy-Scenarios for our course
Your opinion

Where should the Agent Contest go?
Resources
Mehdi Dastani, Jürgen Dix, and Peter Novák.
The First Contest on Multi-Agent Systems based on Computational Logic.

Mehdi Dastani, Jürgen Dix, and Peter Novák.
The second contest on multi-agent systems based on computational logic.

Mehdi Dastani, Jürgen Dix, and Peter Novák.
Agent Contest Competition: 3th edition.
End