# Call for Papers

## LOGIC-BASED AGENT IMPLEMENTATION

A special issue of the journal:
*Annals of Mathematics and Artificial Intelligence*

[ Deadline extended to: 15th March 2003 ]


**Special Issue editors:**

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| Hector Levesque | [Toronto, Canada] |
| Leon Sterling | [Melbourne, Australia] |


### OVERVIEW

The view of computational components as 'agents' is widely used in contemporary software applications, such as Internet navigation, information management, autonomous process control, and e-commerce. The popularity of the agent paradigm stems not only from its intuitive and appealing nature, capturing the notions of flexibility and evolving behaviour, but also from the range of theories, tools and techniques that have been developed over recent years for agent-based systems.

However, the languages in which agents are typically implemented are often standard (usually, object-oriented) languages, with few 'agent' concepts included as a central part. Thus, the abstractions that agent-based systems developers must work with are not always appropriate for producing effective agent applications, especially where 'intelligent' or 'rational' behaviour is required. In addition, with agent-based systems beginning to be used in both safety/mission critical (e.g. autonomous control) and business critical (e.g. e-commerce and security) software, it is clear that more precise, and logically well-founded, development techniques will be required for agent-based applications in the future.

Thus, the aim of this special issue is to bring together high-quality papers exhibiting leading edge research where a "logic-based" approach is taken to the implementation of agent-based systems (often comprising 'rational' or 'intelligent' agents). Our view of 'logic' here is not restricted to classical logic and logic programming techniques and, indeed, much of the leading work in this area does not easily fit within such a classification. We here take a broad view of logic, and consider implementation techniques for agents that are inherently based in some logical formalism. This logical formalism may have been developed for a variety of reasons. For example, the use of logic may enhance the abstractions used in the language, the potential for verification, the type of tools that can be utilised or the breadth of behaviours that can be developed.

### THE JOURNAL

The Annals of Mathematics and Artificial Intelligence journal[1] is intended to represent a wide range of topics of concern to scholars applying quantitative, combinatorial, logical, algebraic and algorithmic methods to Artificial Intelligence areas as diverse as decision support, automated deduction, reasoning, knowledge-based systems, machine learning, computer vision, robotics and planning. The journal is aimed at: applied logicians, algorithms and complexity researchers, Artificial Intelligence theorists and applications specialists using mathematical methods. For more details, see `http://www.kluweronline.com/issn/1012-2443`

### IMPORTANT DATES

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| Submission deadline: | 1st March 2003 |
| Author notification: | 1st July 2003 |
| Revised papers due: | 1st September 2003 |

[1] Editor-in-Chief: Martin Golumbic. Associate Editors: Endre Boros; Sarit Kraus; Anil Nerode.

## TOPICS OF INTEREST

The topics of interest of this special issue include (but are not limited to)

- implementation techniques (together with accompanying software engineering methods) for agent-based or multi-agent systems based on:
  - logic programming (including, concurrent/parallel logic programming)
  - constraints (including, constraint logic programming and concurrent constraint programming)
  - intensional programming
  - situation calculus
  - executable modal/temporal logics
  - multi-paradigm approaches
- advanced techniques within logic-based agents, such as:
  - knowledge representation, nonmonotonic reasoning
  - planning, problem solving and deliberation
  - learning, evolution and adaption
  - cooperation, teamwork, negotiation and social ability
  - decision theory for multi-agent systems
- applications of logic-based agents, for example in:
  - robotics, autonomous process control
  - knowledge/information management, WWW search/navigation
  - e-commerce and B2B applications
  - embedded components
  - telecommunications
  - general purpose agent programming

## SUBMISSION OF MANUSCRIPTS

We invite submission of full (typically, 20-40 pages) high-quality research papers for this special issue. These should neither have been previously published in their full form, nor be under review elsewhere. Submissions consisting of the paper (preferably PDF or Postscript via email but, alternatively, five hard-copies) including an abstract in which the role of logic in the particular approach used is clarified, should be sent to Michael Fisher (address given below) to arrive no later than 1st March 2003. Formatting instructions can be found at the journal's web site.

Queries concerning this special issue should be directed to any of the guest editors. Up-to-date information will also be available from `http://www.csc.liv.ac.uk/~michael/LBAI03`

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