

Call for Papers

LOGIC-BASED AGENT VERIFICATION

A special issue of the: ***Journal of Applied Logic***

[**Deadline: 15th October 2004**]

Special Issue editors: Michael Fisher [Univ. Liverpool, UK]
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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 increasing use of agents in (business, mission, safety) critical applications, together with the development of infrastructures such as the world-wide web and wireless computing is leading to new problems. Central amongst these is that of the *trustworthiness* of agent software. Can agents be trusted to autonomously make decisions in critical areas? In addition, once large numbers of agents are present, can they work together safely?

Thus, it is important to be able to guarantee predictable behaviour for agent-based systems if these are to be used in critical applications. Verification of agent-based behaviour is a complex problem: the behaviour of individual agents must be verified; collections of agents must be shown to be able to work together effectively; and agents that communicate over wider distances and multiple sites must be shown to retain security properties. Tackling these problems often requires a large number of diverse techniques, and many such techniques are based on formal logics, thus providing the clear semantic basis for the verification tasks.

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 verification of agent-based systems. We here take a broad view of logic, and consider a wide range of logical verification techniques (incorporating theorem-proving, model checking, algebraic, abstract machines, etc.).

THE JOURNAL

The Journal of Applied Logic¹ publishes papers in areas of logic which can be applied in other disciplines as well as application papers in those disciplines, the unifying theme being logics arising from modelling the human agent.

IMPORTANT DATES

Submission deadline: 15th October 2004
Author notification: 15th February 2005
Revised papers due: 15th April 2005

¹Executive Editors: D. Gabbay; A. Jones; J. Siekmann.

TOPICS OF INTEREST

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

- verification, modelling and analysis techniques for agent-based or multi-agent systems based on:
 - theorem-proving (including, classical, modal, temporal, higher-order, etc)
 - constraint-based systems
 - model-checking
 - abstract machine modelling
 - algebraic techniques
 - multi-paradigm approaches
 - abstraction techniques
 - links to testing
- applications of logic-based agent verification, for example in:
 - robotics
 - autonomous process control
 - agent-based knowledge/information management
 - WWW search/navigation/discovery
 - e-commerce and B2B applications
 - critical embedded components
 - telecommunications
 - security
 - cooperation, team work and negotiation
 - analysing evolving/adaptive systems

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 15th October 2004. 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/LBAV04>

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