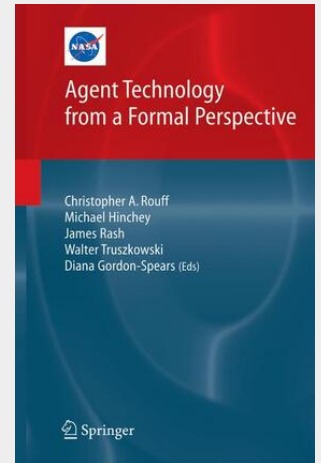


## Agent Technology from a Formal Perspective

During the last several years, the field of agent and multi-agent systems has experienced tremendous growth, i.e., the topic has gained unprecedented popularity. Meanwhile, the field of formal methods has also blossomed and has proven its importance in substantial industrial and government applications. Thus, in 2000 it was quite timely to pursue a workshop to merge the concerns of the two fields. The need for such a workshop was particularly compelling given the growing concerns of agent-based systems users that their systems should be accompanied by behavioral assurances. The Formal Approaches to Agent-Based Systems (FAABS'00) workshop was the first step in trying to address this need. The overwhelming response to FAABS'00 motivated subsequent FAABS ('02 and '04) workshops, as well as this book, which is designed to provide a more in-depth treatment of the topic. This book is organized into four parts. Part I provides introductory background material on the two central topics of the book, namely, agents and formal methods. Chapter 1, by Truszkowski, is an overview of agents. The chapter begins by introducing the basic concept of an agent from a very simple, abstract perspective. It then gradually refines this notion into a detailed agent architecture, using the Goddard agent architecture as an example model. First, the major architectural components (e.g., perceptions, - factors, communications, reasoning, planning, execution) are defined and described. Then, agent behaviors are defined and related to the architectural components that generate them. The chapter concludes with an intriguing discussion of multi-agent communities.

The field of agent & multi-agent systems is experiencing tremendous growth. At the same time the field of formal methods is blossoming and has proven its importance in industrial and government applications. The FAABS (Formal Approaches to Agent-Based Systems) workshops, merging the concerns of the two fields, provided a timely and compelling platform on which the growing concerns and requirements of agent-based systems users that systems should be accompanied by behavioral assurances, could be discussed. This book has arisen from the overwhelming response to FAABS '00, '02 & '04 and all chapters are updated or represent new research, and are designed to provide a more in-depth treatment of the topic. Examples of how others have applied formal methods to agent-based systems are included, plus formal method tools & techniques that readers can apply to their own systems. Agent Technology from a Formal Perspective provides an invaluable in-depth view of the key issues related to agent technology from a formal perspective, for both researchers and practitioners. This is a relatively new interdisciplinary field, and there is enormous room for further growth. The book not only creates an initial foundation, but points to the gaps; indicating open problems to be addressed by future researchers, students & practitioners.



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