Preface

The Advanced Course on Artificial Intelligence ACAI 2001, with the subtitle of "Multi-Agent Systems and Their Applications", held in Prague, Czech Republic, represented a joint event of ECCAI (the European Coordinating Committee for Artificial Intelligence) and AgentLink, the European Network of Excellence for Agent-Based Computing. Whereas ECCAI organizes two-week ACAI courses on different topics each second year, AgentLink's European Agent Systems Summer School (EASSS) has been an annual event since 1999. In 2001, both of these important events were merged, giving weight to the fact that multi-agent systems currently represent one of the hottest topics of AI research. The name, *ACAI 2001 Summer School*, was intended to emphasize that this event continued the tradition of regular ECCAI activities (ACAI), as well as that of the EASSS summer schools of AgentLink.

The Prague ACAI Summer School was proposed and initiated by both the Gerstner Laboratory, Czech Technical University, Prague (GL-CTU) and the Czech Society for Cybernetics and Informatics (CSKI), with the support of the Austrian Research Institute for Artificial Intelligence in Vienna (OFAI).

One of the most important stimulating factors behind the organization of ACAI 2001 was the support provided by the European Commission to the Gerstner Laboratory within the frame of the MIRACLE Centre of Excellence project (No. ICA1-CT-2000-70002). Additional support was later provided by both the Commission's AgentLink II project (IST-1999-29003) and ECCAI. The combined financial and conceptual participation of these important international bodies enabled the invitation of a large number of truly world-class lecturers in this field, who added a unique flavor to the event.

The main goal of the Summer School was to present the current state of the art in the theoretical foundations of multi-agent systems as well as to demonstrate the applicability of these systems in many practical tasks. The choice of the topics and lecturers was driven by the desire to cover the field of multi-agent systems with the maximum breadth, while maintaining the utmost quality. As a result, the presentations highlight many different but complementary aspects and viewpoints of this recently established and very active scientific field.

In total, 29 invited speakers presented tutorials and lectures focusing on the current state of the art in the theoretical foundations and practical applications of multi-agent systems. For the ACAI Summer School, 175 participants from 29 countries registered (73% PhD students, 10% industry). Three student sessions, together containing 26 student papers, which were selected through a regular refereeing process, were organized within the frame of ACAI.

Twenty tutorial papers were included in a special tutorial volume (LNAI No. 2086, Springer-Verlag). Five additional ACAI tutorial papers represent the first part of this volume. These are followed by seven further papers, selected as the best contributions to the ACAI student sessions.

In addition to the combined Summer School, there were four affiliated workshops/meetings that were co-located: the AEMAS 2001 workshop (Adaptability and Embod-

iment Using Multi-Agent Systems), the ESAW 2001 workshop (Engineering Societies in the Agents' World), the AgentLink II SIG meetings, and the meeting of the FIPA Working Group on "Product Modeling and Manufacturing". Three selected papers from the AEMAS 2001 workshop are included in this volume as the third part.

The last part gathers the most valuable papers from the HoloMAS 2001 workshop (Industrial Applications of Holonic and Multi-Agent Systems) held within the framework of the DEXA conference in Munich on September 6, 2002. This series of workshops (with the earlier HoloMAS 2000 held in London, and HoloMAS 2002 expected to be held in Aix-en-Provence in September 2002) concentrates on holonic manufacturing systems as a very attractive application area of the multi-agent paradigm. It seems that industrial manufacturing applications of MAS technology are currently outside the main focus of attention of the MAS research community which, to a large extent, has focused primarily on e-business and e-services of various kinds. However, the potential economic and social effects of holonic and MAS solutions in manufacturing, as well as in virtual enterprising, is huge. The papers included in the last part of this volume report both promising perspectives and the first positive experiences.

Finally, we would like to thank all the contributors to this "joint" volume, as well as the numerous collaborators who helped substantially to shape and complete the book, especially Jiří Lažanský who carried out the main portion of the computer work related to the preparation of both the camera-ready and electronic versions of this volume.

January 2002   Vladimír Mařík
                                                        Olga Štěpánková
                                                     Hana Krautwurmová
                                                          Michael Luck

ACAI 2001

Nineth ECCAI Advanced Course
&
AgentLink's Third European Agent Systems Summer School
(EASSS 2001)

Multi-Agent Systems and Applications II

Prague, Czech Republic, July 2–13, 2001

Program Co-chairs:

Michael LUCK	University of Southampton, UK
Vladimír MAŘÍK	Czech Technical University, Czech Republic
Olga ŠTEPÁNKOVÁ	Czech Technical University, Czech Republic
Robert TRAPPL	Austrian Research Institute for AI, Austria

Invited Speakers:

Hamideh AFSARMANESH	University of Amsterdam, The Netherlands
Elisabeth ANDRÉ	Universität Augsburg, Germany
Luis M. CAMARINHA-MATOS	New University of Lisbon, Portugal
S. Misbah DEEN	University of Keele, UK
Yves DEMAZEAU	Leibnitz-Institute IMAG, France
Jim DORAN	University of Essex, UK
Edmund H. DURFEE	University of Michigan, USA
Klaus FISCHER	DFKI GmbH, Germany
Les GASSER	University of Illinois, USA
Jozef KELEMEN	Silesian University, Czech Republic
Matthias KLUSCH	DFKI GmbH, Germany
Sarit KRAUS	University of Maryland, USA
Yannis LABROU	University of Maryland, USA
Jörg P. MÜLLER	Siemens AG, Germany
Bernhard NEBEL	University of Freiburg, Germany
Eugénio OLIVEIRA	University of Porto, Portugal
Paolo PETTA	Austrian Research Institute for AI, Austria
Stefan POSLAD	University of London, UK
Katia SYCARA	Carnegie Mellon University, USA
Milind TAMBE	University of Southern California, USA
Paul VALCKENAERS	Catholic University of Leuven, Belgium
Wolfgang WAHLSTER	DFKI GmbH, Germany
Hendrik VAN BRUSSEL	Catholic University of Leuven, Belgium
Wiebe VAN DER HOEK	Utrecht University, The Netherlands
Michael WOOLDRIDGE	University of Liverpool, UK

Contributors:

Stephan BALDES	DFKI GmbH, Germany
Bernhard BAUER	Siemens AG, Germany
Michael BERGER	Siemens AG, Germany
Olaf BOCHMANN	Catholic University of Leuven, Belgium
Patricia CHARLTON	University of London, UK
Kurt DRIESSENS	Catholic University of Leuven, Belgium
Petra FUNK	DFKI GmbH, Germany
Dimitar KAZAKOV	University of York, UK
Martin KOLLINGBAUM	Catholic University of Leuven, Belgium
Daniel KUDENKO	University of York, UK
Vladimír KVASNICKA	Slovak Technical University, Slovakia
Sorabain W. DE LIONCOURT	University of Warwick, UK
Michal PĚCHOUČEK	Czech Technical University, Czech Republic
Jirí POSPÍCHAL	Slovak Technical University, Slovakia
David V. PYNADATH	University of Southern California, USA
Thomas RIST	DFKI GmbH, Germany
Christian RUSS	DFKI GmbH, Germany

Organizing Committee:

Hana KRAUTWURMOVÁ	Czech Technical University, Czech Republic
Jirí LAŽANSKÝ	Czech Technical University, Czech Republic
Zuzana HOCHMEISTEROVÁ	Czech Technical University, Czech Republic
Eva KUBRYCHTOVÁ	EKU Agency, Czech Republic
Jirí PALOUŠ	Czech Technical University, Czech Republic

AEMAS 2001

International Workshop on
Adaptability and Embodiment Using Multi-Agent Systems

Prague, Czech Republic, September 7, 2001

Program Committee:

Alexis DROGOUL   Chair, Université Paris 6, France
Kerstin DAUTENHAHN   University of Hertfordshire, UK
Les GASSER   University of Illinois, USA
Yves DEMAZEAU   Institut d'Informatique et Mathématiques
                        Appliquées de Grenoble, France
Toru ISHIDA   University of Kyoto, Japan
Jean-Pierre MÜLLER   Centre de Coopération Internationale en
                        Recherche Agronomique pour le
                        Développement, France

Organizing Committee:

Alain CARDON   Université du Havre
                        LIP6, Université Paris 6 – CNRS, France
Jean-Pierre BRIOT   LIP6, Université Paris 6 – CNRS, France

HoloMAS 2001

Second International Workshop on
Industrial Applications of Holononic and Multi-Agent Systems

Munich, Germany, September 6, 2001

Workshop Co-chairs:

Vladimír MAŘÍK	Czech Technical University, Czech Republic
	Rockwell Automation, Czech Republic
Michal PECHOUCEK	Czech Technical University, Czech Republic

Program Committee:

Luis M.CAMARINHA-MATOS	New University of Lisbon, Portugal
James CHRISTENSEN	Rockwell Automation, USA
S. Misbah DEEN	University of Keele, UK
Klaus FISCHER	DFKI GmbH, Germany
William A. GRUVER	Simon Fraser University, Canada
Duncan McFARLANE	University of Cambridge, UK
Rainer MITTMANN	Softing GmbH, Germany
Jörg P. MÜLLER	Siemens AG, Germany
Douglas H. NORRIE	University of Calgary, Canada
Paul VALCKENAERS	Catholic University of Leuven, Belgium
Jianbing WU	University of Calgary, Canada