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Multi-Agent Systems and Applications II

9th ECCAI-ACAI / EASSS 2001, AEMAS 2001, HoloMAS 2001
Selected Revised Papers

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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
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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
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Les GASSER	University of Illinois, USA
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Yannis LABROU	University of Maryland, USA
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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
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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:

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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
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Table of Contents

Multi-Agent Systems and Applications
ACAI 2001: Selected Tutorial Papers

Intelligent Agents: The Key Concepts 3
M. Wooldridge

Motivated Agent Behaviour and Requirements Applied to Virtual Emergencies 44
S.W. de Lioncourt and M. Luck

Software Agents for Electronic Business: Opportunities and Challenges 61
J.P. Müller, B. Bauer, and M. Berger

From Simulated Dialogues to Interactive Performances 107
E. André, T. Rist, and S. Baldes

Cooperating Agents for Holonic Manufacturing 119
S.M. Deen

Multi-Agent Systems and Applications
ACAI 2001: Selected Student Papers

Self-Stabilizing Distributed Algorithms for Defeat Status Computation in Argumentation 137
M. Giacomin

Replanning in a Resource-Based Framework 148
R. van der Krogt, A. Bos, and C. Witteveen

Distributed Branch and Bound Algorithm in Coalition Planning 159
J. Bárta, O. Štěpánková, and M. Pěchouček

Format Conversations for the Contract Net Protocol 169
R.A. Flores and R.C. Kremer

Adaptive Agents in Argumentation-Based Negotiation 180
C. Carabelea

Flexible Load Balancing in Distributed Information Agent Systems 188
J. Gomoluch and M. Schroeder

Autonomous Agents Applied to Manufacturing Scheduling Problems: A Negotiation-Based Heuristic Approach 198
A. Gozzi, M. Paolucci, and A. Boccalatte

Adaptability and Embodiment Using Multi-Agent Systems
AEMAS 2001: Selected Papers

Adaptability and Embodiment Using Multi-Agent Systems 211
J.-P. Briot, A. Muñoz-Meléndez, and A. Cardon

Distributed Shared Agent Representations 213
F. Brazier, M. van Steen, and N. Wijngaards

Modeling Adaptive Multi-Agent Systems Inspired by Developmental Biology . . . 221
S. Landau and S. Picault

Industrial Applications of Holonic and Multi-Agent Systems
HoloMAS 2001: Selected Papers

Holons & Agents: Recent Developments and Mutual Impacts 233
V. Mařík, M. Fletcher, and M. Pěchouček

Material Handling Problem: FIPA Compliant Agent Implementation 268
P. Vrba and V. Hrdonka

Industrial MAS for Planning and Control 280
P. Tichý, P. Šlechta, F. Maturana, and S. Balasubramanian

An Integral Implementation of a Machine-Holon
Applying the ZEUS Agent Framework 296
K. Glanzer, A. Hämmerle, and R. Geurts

ExPlanTech: Exploitation of Agent-Based Technology in Production Planning . . . 308
A. Ríha, M. Pěchouček, J. Vokřínek, and V. Mařík

A Holonic Approach to Reconfiguring Real-Time Distributed Control Systems . . . 323
R.W. Brennan, M. Fletcher, and D.H. Norrie

Rationales for Holonic Applications in Chemical Process Industries 336
N.N. Chokshi and D.C. McFarlane

Distributed Deadline Control in Holonic Manufacturing Systems 351
M. Fletcher, R.W. Brennan, and D.H. Norrie

CPlanT: Coalition Planning Multi-Agent System
for Humanitarian Relief Operations 363
M. Pěchouček, J. Bárta, and V. Mařík

Author Index 377