

ECAI 2004

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including

**Prestigious Applications of Intelligent Systems
(PAIS 2004)**

Proceedings

Edited by

Ramon López de Mántaras

*Artificial Intelligence Research Institute (IIIA)
Spanish Scientific Research Council (CSIC)
Barcelona, Spain*

and

Lorenza Saitta

*Dipartimento di Informatica
Università del Piemonte Orientale “Amedeo Avogadro”
Alessandria, Italy*

Organized by the European Coordinating Committee for Artificial Intelligence (ECCAI), the Asociación Española Para la Inteligencia Artificial (AEPIA), and the Associació Catalana d'Intel·ligència Artificial (ACIA).

Hosted by the Universidad Politécnica de Valencia and Grupo de Tecnología Informática (GTI).

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Conference and Programme Chairs' Foreword

The proceedings contain the papers selected for the 16th European Conference on Artificial Intelligence (ECAI 2004) and for the associated Conference on Prestigious Applications of Intelligent Systems (PAIS 2004). Among 653 submissions received from 45 countries, 168 papers were accepted for oral presentation at ECAI 2004, 13 for oral presentation at PAIS 2004, and, for the first time, 87 were accepted as posters. The number of submissions corresponds to a steep 32% increase with respect to the average of past ECAIs, as shown in the following table:

Year	Submissions	Accepted	% Full Papers Accepted
1994	450	150	33 %
1996	450	133	30 %
1998	456	158	35 %
2000	443	139	31 %
2002	505	140	28 %
2004	652	181 + 87	28 %

In the following table, showing the distribution of the accepted full papers for ECAI 2002 and ECAI 2004, we can see which are the most active subfields of AI presently. The figures are only indicative, because of the large number of papers that may belong to more than one area.

	2002		2004	
Agents, Distributed AI	15	(10.7 %)	17	(9.4 %)
Case-Based Approaches	2	(1.4 %)	2	(1.1 %)
Cognitive Modelling	3	(2.1 %)	6	(3.3 %)
Constraint Satisfaction, Search	12	(8.6 %)	22	(12.1 %)
Evolving Systems	6	(4.2 %)	2	(1.1 %)
Knowledge Engineering	10	(7.1 %)	2	(1.1 %)
Knowledge Representation	14	(10.0 %)	28	(15.4 %)
Machine Learning, Data Mining	16	(11.4 %)	31	(17.1 %)
Natural Language Processing	11	(7.8%)	8	(4.4 %)
Neural Networks, Kernel Machines	4	(2.8 %)	4	(2.2 %)
Philosophical Foundations	2	(1.4 %)	2	(1.1 %)
Planning, Scheduling	6	(4.2 %)	11	(6.1 %)
PAIS	12	(8.6%)	13	(7.2 %)
Reasoning	19	(13.6 %)	24	(13.3 %)
Robotics	3	(2.1 %)	4	(2.2 %)
Vision, Perception	5	(3.6 %)	5	(2.8 %)

Total	140		181	

Although the majority of the submitted papers were from Europe (505), there has been a significant number of papers from the rest of the world, and particularly from Asia (53), North America (50) and Oceania (21). We can also notice the emergence of high quality AI research in South America (16) and Africa (8), and this is an indicator of the increasing interest in AI worldwide.

The quality of any conference depends on the efforts of many people and particularly the authors and the programme committee. The surprisingly large number of submissions required additional efforts from all those involved in the reviewing process. Indeed, the Programme Committee Chair, assisted by 19 Area Chairs and 53

Programme Committee members, recruited 695 reviewers who wrote more than 1900 reviews. All papers were discussed at the two-day intensive Area Chairs meeting on April 23-24, 2004 in Torino. We would like to warmly thank the Area Chairs, Programme Committee members, and reviewers for their hard and difficult work of selecting the papers. We also express our gratitude to all the authors and to the invited speakers Glorianna Davenport (MIT, USA), Christian Freksa (University of Bremen, Germany), Carole Goble (University of Manchester, UK), and Seppo Laukkanen (SenseTrix, Finland) for contributing to make ECAI 2004 an interesting event for the AI community.

Special thanks are also due to the ECAI 2004 Workshops Chair, José Miguel Benedí, for selecting and coordinating the 28 pre-conference workshops, and to the ECAI 2004 Tutorials Chair, Marie-Christine Rousset, for the 10 pre-conference tutorials.

We owe very deep appreciation to the Local Chair, Vicent Botti and to his organization team. Their kindness and enthusiasm have made possible to hold this conference in the beautiful city of Valencia.

We also thank Rob Milne, the Chair of the ECCAI Board, and the members of the ECAI 2004 Advisory Committee for their valuable advices on several important issues.

The help of Anne Marie de Rover from IOS Press during the preparation of the proceedings is also gratefully acknowledged. We would also like to express our thanks to ACIA and AEPIA (Catalan and Spanish AI Associations) as well as to the Technical University of Valencia and our respective research groups (Artificial Intelligence Research Institute in Barcelona and Dipartimento di Informatica of the Università del Piemonte Orientale) for their support. A special thank to Dino Mendola, for handling all the software-related issues.

We are also very pleased to be able to continue holding the Prestigious Applications of Intelligent Systems (PAIS) subconference track, which was initiated at ECAI 2000 in Berlin. This is, therefore, the third edition of this event. Pádraig Cunningham and his Programme Committee have done an excellent job in selecting the application papers for this track.

Finally, we are glad to see that the co-located *Starting AI Researchers Symposium* (STAIRS), that was initiated in 2002, is taking place again, for a second time, this year. Eva Onaindia and Steffen Staab have done a great job as co-chairs of STAIRS 2004, and María José Ramírez as STAIRS 2004 Local Chair. We hope that the success of this second edition of STAIRS will contribute to solidify this event as a permanently co-located symposium in future ECAI conferences.

Lorenza Saitta
ECAI 2004 Programme Chair

Ramon López de Mántaras
ECAI 2004 Conference Chair

Prestigious Applications of Intelligent Systems

(PAIS Subconference)

PAIS Programme Chair

Pádraig Cunningham, *Ireland*

PAIS Programme Chair's Foreword

For a mature research discipline such as AI it is important to show that it also delivers technology that is of practical use. This is important to ensure the continued funding of the discipline, but is also important in assuring researchers that their work can have an impact on the society. In this respect the PAIS subconference is an important part of the ECCAI framework. Each PAIS is a showcase for AI applications that demonstrate practical uses of AI technology. This edition, the third PAIS, is no exception. In all, we have 13 papers that report on effective and valuable applications of AI. These papers show in particular that AI can add value in e-commerce and web applications. We also have accounts of successful applications in industry and in healthcare. Thus, in the first decade of the new millennium, we can be confident that AI research is in a healthy state and is delivering real benefits to business and the community.

Pádraig Cunningham
PAIS 2004 Programme Chair

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Local Search for Heuristic Guidance in Tree Search, *Alexander Nareyek, Stephen F. Smith, Christian M. Ohler*

Identifying relational concept lexicalisations by using general linguistic knowledge, *Maria Teresa Pazienza, Marco Pennacchiotti, Fabio Massimo Zanzotto*

Adaptive, Multilingual Named Entity Recognition in Web Pages, *Georgios Petasis, Vangelis Karkaletsis, Claire Grover, Benjamin Hachey, Maria-Teresa Pazienza, Michele Vindigni, Jose Coch*

Extending Defeasible Logic and Defeasible Prolog, *Ahti-Veikko Pietarinen*

Context-Aware Personalised Service Delivery, *Edoardo Pignotti, Peter Edwards, Gunnar Grimnes*

Cooperation based on communication: An approach for an autonomous driving system, *Ralf Regele, Paul Levi*

A Characterization of Linearly Compensated Hybrid Connectives Used in Fuzzy Classifications, *Mónica Sánchez, Francesc Prats, Núria Agell, Joseph Aguilar-Martin*

Equilibrium Strategies for Task Allocation in Dynamic Multi-Agent System, *David Sarne, Meirav Hadad, Sarit Kraus*

Symbolic Models for Diagnosing Discrete-Event Systems, *Anika Schumann, Yannick Pencolé, Sylvie Thiébaux*

Concurrent Planning by Decomposition, *Laura Sebastia, Eva Onaindia, Eliseo Marzal*
An Intrinsic Information Content Metric for Semantic Similarity in WordNet, *Nuno Seco, Tony Veale, Jer Hayes*
Kernel Machine Based Feature Extraction Algorithms for Regression Problems, *Csaba Szepesvári, András Kocsor, Kornél Kovács*
Variants of A* for Planning, *Minh Tang, Amol Dattatraya Mali*
Domain Representation Assisting Cognitive Analysis, *Antoaneta Serguieva, Tariq Khan*
Configuration of web services as parametric design, *Annette ten Teije, Frank van Harmelen, Bob Wielinga*
A Spanish-Catalan Translator Using Statistical Methods, *Jesús Tomás, Jaime Lloret, Francisco Casacuberta*
Defining Classes of Influences for the Acquisition of Probability Constraints for Bayesian Networks, *Linda C. van der Gaag, Eveline M. Helsen*
A Qualitative Representation of Trajectory Pairs, *Nico Van de Weghe, Anthony G. Cohn, Philippe De Maeyer*
Postponing Branching Decisions, *Willem Jan van Hove, Michela Milano*
Contextualized Abstraction for Assertion-Level Theorem Proving, *Quoc Bao VO*
Automatic Recognition of Famous Artists by Machine, *Gerhard Widmer, Patrick Zanon*
Soft Constraints with Partially Ordered Preferences, *Nic Wilson*
An Ant Colony Genetic Algorithm, *Shao Xiaowei, Shao Changsheng, Zhao Changan*
NGP: Numerical Graph Planning, *Joseph Zalaket, Guy Camilleri*
Topological Visual Localization using Decentralized Galois Lattices, *Emmanuel Zenou, Malik Ghallab, Manuel Samuelides*

XVIII. Invited Talks

Media Fabrics: The Problem of Time in Personal Media Making, *Glorianna Davenport*
Spatial Cognition: An AI Perspective, *Christian Freksa*
The Semantic Grid: Myth Busting and Bridge Building, *Carole Goble, David De Roure*
Adding Intelligence to Virtual reality, *Seppo Laukkanen, Ilkka Karanta, Ville Kotovirta, Jussi Markkanen, Jukka Rönkkö*

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