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Preface

The Mexican International Conference on Artificial Intelligence (MICAI) is aimed at promoting research in artificial intelligence (AI) and cooperation among Mexican researchers and their peers worldwide. MICAI is organized by the Mexican Society for Artificial Intelligence (SMIA) in collaboration with the American Association for Artificial Intelligence (AAAI).

After the success of the three previous biannual conferences, we are pleased to announce that MICAI conferences are now annual, and we present the proceedings of the 4th Mexican International Conference on Artificial Intelligence, MICAI 2005, held on November 14–18, 2005, in Monterrey, Mexico. This volume contains the papers included in the main conference program, which was complemented by tutorials, workshops, and poster sessions, published in supplementary proceedings. The proceedings of past MICAI conferences were also published in Springer's Lecture Notes in Artificial Intelligence (LNAI) series, vols. 1793, 2313, and 2972.

Table 1. Statistics of submissions and accepted papers by country/region

	Authors		Papers[1]	
Country/Region	Subm	Accp	Subm	Accp
Algeria	2	–	0.66	–
Argentina	27	4	8.66	1.5
Australia	7	–	2.66	–
Brazil	48	14	15.16	3.66
Bulgaria	1	1	0.5	0.5
Canada	13	4	4.75	2
Chile	14	10	6	4
China	288	65	107.33	23.66
Colombia	1	–	1	–
Cuba	6	–	1.66	–
Czech Republic	1	–	1	–
Denmark	3	3	0.75	0.75
France	24	10	10.33	4.66
Germany	2	1	2	1
Hong Kong	3	1	1.16	0.33
India	6	–	4	–
Iran	6	–	4	–
Ireland	3	3	1	1
Italy	8	–	3.5	–
Japan	13	2	5	1
Korea, South	71	7	33	2
Lebanon	2	–	1	–
Lithuania	3	1	1.5	0.50
Malaysia	2	–	1	–
Mexico	383	139	131.91	47.44
Netherlands	3	2	1.2	1
New Zealand	4	4	1	1
Norway	4	1	2.33	1
Poland	8	2	3	1
Portugal	2	–	0.5	–
Romania	2	2	0.5	0.5
Russia	10	3	7	1.5
Singapore	3	–	2	–
Slovakia	1	–	1	–
Spain	71	25	20.81	7.6
Sweden	4	–	1	–
Taiwan	8	–	3	–
Thailand	1	–	0.25	–
Tunisia	5	–	2	–
Turkey	11	8	3.5	2.5
UK	23	17	9.50	7.16
USA	29	8	11.33	3.37
Uruguay	4	–	1.00	–
Total:	*1130*	*341*	*423*	*120*

[1] Counted by authors: e.g., for a paper by 3 authors: 2 from Mexico and 1 from USA, we added $\frac{2}{3}$ to Mexico and $\frac{1}{3}$ to USA.

The number of submissions to MICAI 2005 was significantly higher than that of the previous conferences: 423 full papers by 1130 authors from 43 different countries were submitted for evaluation, see Tables 1 and 2.

Each submission was reviewed by three independent Program Committee members. This book contains revised versions of 120 papers by 341 authors

Table 2. Statistics of submissions and accepted papers by topic[2]

Topic	Submitted	Accepted
Assembly	7	2
Automated Theorem Proving	3	1
Belief Revision	7	4
Bioinformatics	17	2
Case-Based Reasoning	10	3
Common Sense Reasoning	6	3
Computer Vision	37	12
Constraint Programming	12	2
Data Mining	50	10
Expert Systems/Knowledge-Based Systems	25	6
Fuzzy Logic	33	11
Genetic Algorithms	50	14
Hybrid Intelligent Systems	46	12
Intelligent Interfaces: Multimedia; Virtual Reality	15	1
Intelligent Organizations	13	3
Intelligent Tutoring Systems	18	3
Knowledge Acquisition	24	5
Knowledge Management	24	7
Knowledge Representation	44	13
Knowledge Verification; Sharing and Reuse	7	3
Logic Programming	6	2
Machine Learning	91	28
Model-Based Reasoning	9	2
Multiagent Systems and Distributed AI	54	11
Natural Language Processing/Understanding	33	13
Navigation	11	4
Neural Networks	64	21
Nonmonotonic Reasoning	6	2
Ontologies	22	4
Philosophical and Methodological Issues of AI	19	4
Planning and Scheduling	24	8
Qualitative Reasoning	4	1
Robotics	45	21
Sharing and Reuse	7	3
Spatial and Temporal Reasoning	7	2
Uncertainty/Probabilistic Reasoning	29	12
Other	62	20

[2] According to the topics indicated by the authors. A paper may be assigned to more than one topic.

selected after thorough evaluation for inclusion in the conference program. Thus the acceptance rate was 28.3%. The book is structured into 14 thematic fields representative of the main current areas of interest within the AI community:

- Knowledge Representation and Management,
- Logic and Constraint Programming,
- Uncertainty Reasoning,
- Multiagent Systems and Distributed AI,
- Computer Vision and Pattern Recognition,
- Machine Learning and Data Mining,
- Evolutionary Computation and Genetic Algorithms,
- Neural Networks,
- Natural Language Processing,
- Intelligent Interfaces and Speech Processing,
- Bioinformatics and Medical Applications,
- Robotics,
- Modeling and Intelligent Control,
- Intelligent Tutoring Systems.

The conference featured excellent keynote lectures presented by Erick Cantú-Paz of CASC, John McCarthy of Stanford University, Katsushi Ikeuchi of the University of Tokyo, Tom Mitchell of Carnegie Mellon University, Jaime Simão Sichman of Universidade de São Paulo, and Piero P. Bonissone of General Electric.

The following papers received the Best Paper Award and the Best Student Paper Award, correspondingly (the Best Student Paper was selected from papers for which the first author was a full-time student):

1st Place: A Framework for Reactive Motion and Sensing Planning: a Critical Events-Based Approach, by *Rafael Murrieta Cid, Alejandro Sarmiento, Teja Muppirala, Seth Hutchinson, Raul Monroy, Moises Alencastre Miranda, Lourdes Muñoz Gómez, Ricardo Swain*;

2nd Place: A Noise-Driven Paradigm for Solving the Stereo Correspondence Problem, by *Patrice Delmas, Georgy Gimel'farb, Jiang Liu, John Morris*;

3rd Place: Proximity Searching in High Dimensional Spaces with a Proximity Preserving Order, by *Edgar Chavez, Karina Figueroa, Gonzalo Navarro*;

Student: A Similarity-Based Approach to Data Sparseness Problem of the Chinese Language Modeling, by *Jinghui Xiao, Bingquan Liu, Xiaolong Wang, Bing Li.*

We want to thank all people involved in the organization of this conference. In the first place these are the authors of the papers constituting this book: it is the excellence of their research work that gives value to the book and sense to the work of all other people involved.

Our *very special* thanks goes to Ángel Kuri and Raúl Monroy, who carried out a huge part of the effort of preparation of the conference in general and reviewing process in particular with professionalism and enthusiasm without which this conference would not have been possible and this book would not have appeared.

We thank the members of the Program Committee and the conference staff. We are deeply grateful to the Tecnológico de Monterrey at Monterrey for their

warm hospitality to MICAI 2005. We would like to express our gratitude to Francisco J. Cantú-Ortiz, Dean of Research and Graduate Studies of Tecnológico de Monterrey at Monterrey, and to all members of this office, with special thanks to Leticia Rodríguez for coordinating activities on the local arrangements. We are also deeply grateful to Fernando J. Jaimes, Dean of the Division of Information Technology and Electronics, and Rogelio Soto-Rodríguez, Director of the Center for Intelligent Systems, and all members of this center. We thank Hiram Calvo of CIC-IPN and Manuel Vilares of University of Vigo for their significant contribution to the reviewing process.

The entire submission, reviewing, and selection process, as well as putting together the proceedings, was supported for free by the EasyChair system (www.EasyChair.org); we express our gratitude to its author Andrei Voronkov for his constant support and help. Last but not least, we deeply appreciate the Springer staff's patience and help in editing this volume—it is always a great pleasure to work with them.

September 2005

Alexander Gelbukh
Álvaro de Albornoz
Hugo Terashima

Organization

MICAI 2005 was organized by the Mexican Society for Artificial Intelligence (SMIA), in collaboration with the Tecnológico de Monterrey at Monterrey and at Mexico City, the Centro de Investigación en Computación del Instituto Politécnico Nacional, the Instituto Tecnológico Autónomo de México, and the Instituto Nacional de Astrofísica, Óptica y Electrónica. The contribution of the following sponsors is acknowledged and greatly appreciated: Company PHAR, S. A. de C. V., TCA Group, and the Government of the State of Nuevo Leon, Mexico.

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