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Preface

Artificial intelligence (AI) is a branch of computer science that models the human ability of reasoning, usage of human language and organization of knowledge, solving problems and practically all other human intellectual abilities. Usually it is characterized by the application of heuristic methods because in the majority of cases there is no exact solution to this kind of problem.

Soft computing can be viewed as a branch of AI that deals with the problems that explicitly contain incomplete or complex information, or are known to be impossible for direct computation, i.e., these are the same problems as in AI but viewed from the perspective of their computation.

The Mexican International Conference on Artificial Intelligence (MICAI), a yearly international conference series organized by the Mexican Society for Artificial Intelligence (SMIA), is a major international AI forum and the main event in the academic life of the country's growing AI community. In 2010, SMIA celebrated 10 years of activity related to the organization of MICAI as is represented in its slogan "*Ten years on the road with AI*".

MICAI conferences traditionally publish high-quality papers in all areas of artificial intelligence and its applications. The proceedings of the previous MICAI events were also published by Springer in its Lecture Notes in Artificial Intelligence (LNAI) series, vols. 1793, 2313, 2972, 3789, 4293, 4827, 5317, and 5845. Since its foundation in 2000, the conference has been growing in popularity and improving in quality.

This book contains 44 papers that were peer-reviewed by reviewers from the independent international Program Committee. The book is structured into five thematic areas representative of the main current topics of interest for the AI community and their applications related to soft computing:

- Machine learning and pattern recognition
- Automatic learning for natural language processing
- Evolutionary algorithms and other naturally-inspired algorithms
- Hybrid intelligent systems and neural networks
- Fuzzy logic

The other volume that corresponds to MICAI 2010 contains the papers related to other areas of AI:

- Natural language processing
- Robotics, planning and scheduling
- Computer vision and image processing
- Logic and distributed systems
- AI-based medical applications

We are sure that the book will be of interest for researchers in all AI fields, students that are specializing in these topics and for the public in general that pays attention to the recent development of the AI.

MICAI is an international conference both due to the extended geography of its submissions and for the composition of its Program Committee. Below we present the statistics of the papers submitted and accepted at MICAI 2010. We received 301 submissions from 34 countries, from which 82 papers were accepted. So the general **acceptance rate was 27.2%**. Since MICAI is held in Mexico, we received many submissions from this country, but the acceptance rate for these papers was even lower: 24%. In the table below, the papers are counted by authors, e.g., for a paper by two authors from the country X and one author from the country Y, we added two-thirds to X and one-third to Y.

Table 1. Statistics of MICAI 2010 papers by country

Country	Authors	Submitted	Accepted
Argentina	7	4.00	2.00
Benin	1	0.50	0.50
Brazil	33	13.50	3.00
Canada	3	1.50	1.50
Chile	4	2.00	0.00
China	7	2.50	0.00
Colombia	25	16.67	2.67
Cuba	10	6.78	1.95
Czech Republic	2	2.00	2.00
Finland	1	1.00	0.00
France	11	3.23	0.73
Germany	5	3.25	1.00
Greece	2	0.50	0.00
Hungary	1	0.20	0.20
India	3	1.67	0.00
Iran, Islamic Republic of	9	5.00	1.00
Israel	7	3.33	2.67
Italy	3	0.60	0.60
Japan	4	3.50	2.00
Korea, Republic of	11	4.00	2.00

Table 1. (*continued*)

Country	Authors	Submitted	Accepted
Lithuania	2	1.00	0.00
Mexico	384	186.78	45.53
New Zealand	2	0.67	0.00
Pakistan	9	4.75	2.67
Poland	6	4.00	1.00
Russian Federation	3	2.00	1.00
Singapore	2	2.33	0.33
Spain	22	7.08	2.25
Sweden	1	1.00	0.00
Taiwan	1	1.00	0.00
Turkey	2	1.00	1.00
UK	8	2.67	1.00
USA	19	9.98	4.40
Venezuela, Bolivarian Republic of	2	1.00	0.00

We want to thank all the people involved in the organization of this conference. In the first place, these are the authors of the papers published in this book: it is the value of their research work that constitutes the essence of the book. We thank the Track Chairs for their hard work and the Program Committee members and additional reviewers for their great effort reviewing the papers, allowing their selection for the conference.

We would like to express our sincere gratitude to the Universidad Autónoma del Estado de Hidalgo (UAEH), ITESM Campus Pachuca, Universidad Politécnica de Pachuca (UPP), Rectoría of the UAEH headed by Humberto Veras Godoy, Gerardo Sosa Castelán, General Secretary of the UAEH, and Octavio Castillo Acosta, head of the Basic Sciences and Engineering Institute of the UAEH, for their warm hospitality related to MICAI 2010, and for providing the infrastructure for the presentation of the keynote speakers, tutorials and workshops, and for their valuable participation and support in the organization of this conference. Their commitment allowed that the opening ceremony, technical contributory conferences, workshops and tutorials could be held in the main historic building of the UAEH. We also want to thank the Consejo de Ciencia y Tecnología del Estado de Hidalgo for their partial financial support (project FOMIX 2008/97071) and the Oficina de Convenciones y Visitantes of the State of Hidalgo represented by Ms. Lizeth Islas for their valuable effort in organizing the cultural program as well as entertainment activities. We are deeply grateful to the

conference staff and to all members of the Local Committee headed by Félix A. Castro Espinoza and Joel Suárez Cansino.

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 are also grateful to Springer's staff for their help in preparation of this issue.

Grigori Sidorov
Arturo Hernández-Aguirre
Carlos Alberto Reyes-García

Conference Organization

MICAI 2010 was organized by the Mexican Society for Artificial Intelligence (SMIA, Sociedad Mexicana de Inteligencia Artificial) in collaboration with Universidad Autónoma del Estado de Hidalgo (UAEH), Centro de Investigación en Computación del Instituto Politécnico Nacional(CIC-IPN), Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE), Universidad Nacional Autónoma de México (UNAM), Universidad Autónoma de México (UAM), Instituto Tecnológico de Estudios Superiores de Monterrey (ITESM), and Centro de Investigación en Matemáticas (CIMAT), Mexico.

The MICAI series webpage is www.MICAI.org. The webpage of the Mexican Society for Artificial Intelligence (SMIA) is www.SMIA.org.mx. Contact options and additional information can be found on those webpages.

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Table of Contents – Part II

Invited Paper

Machine Learning and Pattern Recognition

Automatic Learning for Natural Language Processing

Hybrid Intelligent Systems and Neural Networks

Evolutionary Algorithms and Other Naturally-Inspired Algorithms

Fuzzy Logic

Table of Contents – Part I

Invited Paper

Natural Language Processing

Robotics, Planning and Scheduling

Computer Vision and Image Processing

Logic and Distributed Systems

AI-Based Medical Application