

# Preface

The Mexican International Conference on Artificial Intelligence (MICAI) is a yearly international conference series organized by the Mexican Society of Artificial Intelligence (SMIA) since 2000. MICAI is a major international artificial intelligence forum and the main event in the academic life of the country's growing artificial intelligence community.

MICAI conferences publish high-quality papers in all areas of artificial intelligence and its applications. The proceedings of the previous MICAI events have been published by Springer in its *Lecture Notes in Artificial Intelligence* series, vol. 1793, 2313, 2972, 3789, 4293, 4827, 5317, 5845, 6437, 6438, 7094, 7095, 7629, 7630, 8265, 8266, 8856, and 8857. Since its foundation in 2000, the conference has been growing in popularity and improving in quality.

The proceedings of MICAI 2015 are published in two volumes. The first volume, *Advances in Artificial Intelligence and Soft Computing*, contains 46 papers structured into eight sections:

- Invited Paper
- Natural Language Processing
- Logic and Multi-agent Systems
- Bioinspired Algorithms
- Neural Networks
- Evolutionary Algorithms
- Fuzzy Logic
- Machine Learning and Data Mining

The second volume, *Advances in Artificial Intelligence and Its Applications*, contains 46 papers structured into eight sections:

- Invited Papers
- Natural Language Processing Applications
- Educational Applications
- Biomedical Applications
- Image Processing and Computer Vision
- Search and Optimization
- Forecasting
- Intelligent Applications

This two-volume set will be of interest for researchers in all areas of artificial intelligence, students specializing in related topics, and the general public interested in recent developments in artificial intelligence.

The conference received for evaluation 297 submissions by 667 authors from 34 countries: Argentina, Australia, Brazil, Canada, Chile, China, Colombia, Cuba, Czech Republic, Ecuador, France, Germany, India, Iran, Israel, Italy, Japan, Kazakhstan,

**Table 1.** Distribution of papers by topics

Track	Submitted	Accepted	Rate
Applications	73	29	40 %
Pattern Recognition	58	15	26 %
Machine Learning	54	18	33 %
Data Mining	46	21	46 %
Natural Language Processing	41	15	37 %
Computer Vision and Image Processing	38	9	24 %
Genetic Algorithms	35	13	37 %
Expert Systems and Knowledge-Based Systems	30	6	20 %
Knowledge Representation and Management	30	12	40 %
Neural Networks	27	10	37 %
Hybrid Intelligent Systems	21	10	48 %
Planning and Scheduling	20	4	20 %
Fuzzy Logic	18	7	39 %
Robotics	18	5	28 %
Bioinformatics and Medical Applications	17	5	29 %
Multi-agent Systems and Distributed AI	14	2	14 %
Ontologies	13	5	38 %
Sentiment Analysis and Opinion Mining	12	2	17 %
Constraint Programming	10	6	60 %
Knowledge Acquisition	9	3	33 %
Intelligent Tutoring Systems	8	5	62 %
Uncertainty and Probabilistic Reasoning	8	4	50 %
Logic Programming	7	5	71 %
Intelligent Interfaces: Multimedia, Virtual Reality	5	2	40 %
Intelligent Organizations	4	–	–
Automated Theorem Proving	3	2	67 %
Spatial and Temporal Reasoning	3	2	67 %
Case-Based Reasoning	2	1	50 %
Model-Based Reasoning	2	2	100 %
Non-monotonic Reasoning	1	–	–
Philosophical and Methodological Issues of AI	1	–	–
Qualitative Reasoning	1	1	100 %

Mexico, Pakistan, Peru, Poland, Portugal, Romania, Russia, Saudi Arabia, Slovakia, Spain, Switzerland, Taiwan, Tunisia, Turkey, UK, and USA; the distribution of papers by topics is shown in Table 1. Of those submissions, 89 papers were selected for publication in these two volumes after a peer-reviewing process carried out by the international Program Committee. The acceptance rate was 29.9 %.

In addition to regular papers, the volumes contain three invited papers by the keynote speakers Alexander Gelbukh (Mexico), Gennady Osipov (Russia), and Zita Vale (Portugal).

The international Program Committee consisted of 172 experts from 27 countries: Australia, Azerbaijan, Belgium, Brazil, Canada, Colombia, Czech Republic, Denmark, Finland, France, Germany, Greece, India, Israel, Italy, Japan, Mexico, New Zealand, Poland, Russia, Singapore, Spain, Sweden, Switzerland, Turkey, UK, and USA.

MICAI 2014 was honored by the presence of renowned experts who gave excellent keynote lectures:

- Alexander Gelbukh, Instituto Politécnico Nacional, Mexico
- Gennady Osipov, Higher School of Economics, Russia
- Paolo Rosso, Universitat Politècnica de València, Spain
- Ruslan Salakhutdinov, University of Toronto, Canada
- Juan M. Torres Moreno, Université d'Avignon et des Pays de Vaucluse, France
- Zita Vale, Politécnico do Porto, Portugal

The technical program of the conference also featured tutorials presented by Roman Barták (Czech Republic), Ildar Batyrshin (Mexico), Alexander Gelbukh (Mexico), Isai Rojas González (Mexico), Luis Enrique Sucar (Mexico), Zita Vale (Portugal), and Ivan Zelinka (Czech Republic), among others. Four workshops were held jointly with the conference: the 8th Workshop on Hybrid Intelligent Systems, HIS 2015; the 8th Workshop on Intelligent Learning Environments, WILE 2015; the Second International Workshop on Recognizing Textual Entailment and Question Answering, RTE-QA 2015; and the First International Workshop on Intelligent Decision Support Systems (DSS) for Industry Application.

The authors of the following papers received the Best Paper Award based on the paper's overall quality, significance, and originality of the reported results:

First place:	<p>“Detecting Social Spammers in Colombia 2014 Presidential Election,” by Jhon Adrián Cerón-Guzmán and Elizabeth León (Colombia)</p> <p>Prize from Springer: € 400; prize from SMIA: € 400</p>
Second place:	<p>“Dynamic Systems Identification and Control by Means of Complex-Valued Recurrent Neural Networks,” by Ieroham Baruch, Victor Arellano Quintana, and Edmundo Pérez Reynaud (Mexico)</p> <p>Prize from Springer: € 300; prize from SMIA: € 300</p>
Third place:	<p>“Inferring Sentiment-Based Priors in Topic Models,” by Elena Tutubalina and Sergey Nikolenko (Russia)</p> <p>Prize from Springer: € 200; prize from SMIA: € 200</p>

The authors of the following paper selected among all papers of which the first author was a full-time student, excluding the papers listed above, received the Best Student Paper Award:

First place:	<p>“Place Recognition-Based Visual Localization Using LBP Feature and SVM,” by Yongliang Qiao, Cindy Cappelle, and Yassine Ruichek (France)</p> <p>Prize from Springer: € 100; prize from SMIA: € 100</p>
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The awards included significant monetary prizes sponsored by Springer and by the Mexican Society of Artificial Intelligent (SMIA).

We want to thank everyone involved in the organization of this conference. In the first place, the authors of the papers published in this book: it is their research work that gives value to the book and to the work of the organizers. We thank the track chairs for their hard work, the Program Committee members, and the additional reviewers for their great effort spent on reviewing the submissions.

We would like to thank the Polytechnic University of Morelos (Upemor) for hosting the workshops and tutorials of MICAI 2015; in particular, we thank Dr. Mireya Gally Jordá, the rector of the university, and Dr. Yadira Toledo, the academic secretary, for their support and generosity. We also thank the Tecnológico de Monterrey Campus Cuernavaca for the hospitality and for opening its doors to the participants of MICAI 2015; we would especially like to thank Dr. Mónica Larre, the director of professional studies, for her support. We thank the INAH Delegación Morelos, Secretary of Culture of Morelos, and Secretary of Tourism of Morelos, particularly Mr. Manuel Zepeda Mata, Ministry of Promotion of the Arts, and Mr. Sergio Perea Garza, Director for Tourism, for their support in carrying out the cultural activities of MICAI 2015. We also want to thank the staff of the Electrical Research Institute (IIE) and the National Center for Research and Technology Development (CENIDET) for their support in the organization of this conference.

We gratefully acknowledge the sponsorship received from Springer for monetary prizes handed to the authors of the best papers of the conference. This generous sponsorship demonstrates Springer's strong commitment to the development of science and their sincere interest in the highest quality of the conferences published with them.

We are deeply grateful to the conference staff and to all members of the local committee headed by Gustavo Arroyo Figueroa, Yasmín Hernández, and Noé Alejandro Castro Sánchez. We acknowledge support received from the project CONACYT 240844. The entire submission, reviewing, and selection process, as well as preparation of the proceedings, was supported for free by the EasyChair system ([www.easychair.org](http://www.easychair.org)). Finally, yet importantly, we are very grateful to Springer staff for their patience and help in the preparation of this volume.

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