



14è Congrés Internacional de l'Associació Catalana d'Intel·ligència Artificial

the 14th international
conference of the ACIA
promotes the discussion and
sharing of works on the field of
artificial intelligence done on
Catalonia and also works as a
meeting point for catalan AI
researchers



26-28 October, 2011

Universitat de Lleida

Organized by:

Associació Catalana d'Intel·ligència Artificial

AI Research Group

Invited talks



Bart Selman. Cornell University

Thursday, October 27, 9:45 – 11:00

Going Beyond NP: New Challenges in Inference Technology

In recent years, we have seen tremendous progress in inference technologies. For example, in the area of Boolean satisfiability (SAT) and Mixed Integer Programming (MIP) solvers now enable us to tackle significant practical problem instances with up to a million variables and constraints. Key to this success is the ability to strike the right balance between the expressiveness of the underlying representation formalism and the efficiency of the solvers. The next challenge is to extend the reach of these solvers to more complex tasks that lie beyond NP. I will discuss our work on sampling, counting, probabilistic reasoning, and adversarial reasoning. In particular, I will discuss a new sampling technique based on the so-called flat histogram method, from statistical physics. The technique allows for fast probabilistic inference and learning in Markov Logic networks and other graphical models. In the area of adversarial reasoning, the UCT method, based on sampling strategies first developed for use in multi-armed bandit scenarios, provides a compelling alternative to traditional minimax search. The method has led to an exciting advance in the strength of GO programs. I'll discuss insights into the surprising effectiveness of the UCT technique.

Bart Selman is a Professor of Computer Science at Cornell University. He previously was at AT&T Bell Laboratories. His research interests include efficient reasoning procedures, planning, knowledge representation, and connections between computer science and statistical physics. He has (co-)authored over 100 publications, including six best paper awards. His papers have appeared in venues spanning Nature, Science, Proceedings of the National Academy of Sciences, and a variety of conferences and journals in AI and Computer Science. He has received the Cornell Stephen Miles Excellence in Teaching Award, the Cornell Outstanding Educator Award, an NSF Career Award, and an Alfred P. Sloan Research Fellowship. He is a Fellow of the American Association for Artificial Intelligence and a Fellow of the American Association for the Advancement of Science.



Christian Bessière. University of Montpellier. LIRMM. CNRS

Friday, October 28, 9:45 – 11:00

Global Constraints in Constraint Programming

Constraint propagation is a key feature in constraint programming. In the last 15 years, global constraints became an essential component of constraint programming because they often allow stronger propagation. There is a catalog that contains more than 300 global constraints. We will show that, surprisingly, for many of those constraints, reasoning on a decomposition into simple fixed-arity constraints achieves the same level of propagation. But we found global constraints that express a non decomposable property. This means that for these constraints, no decomposition in fixed-arity constraints is able to propagate as much as the original global constraint. This result of non-decomposability also holds for decompositions in SAT, using the well-known direct encoding translation.

Christian Bessiere received a PhD in Computer Science in 1992. He is a research director at CNRS (Centre National de la Recherche Scientifique). He has been elected a fellow of the European Coordinating Committee for Artificial Intelligence for his contributions to the field of AI in Europe. He was several times area chair of the European Conference on Artificial Intelligence (ECAI). He is an associate editor of the Artificial Intelligence journal, he is on the advisory board of the Constraints journal, and he was an associate editor of the Journal of Artificial Intelligence Research. He published more than 100 papers among which more than 60 in the main journals and conferences on Artificial Intelligence (Artificial Intelligence, Journal of Artificial Intelligence Research, IJCAI, AAI, CP). One of them received the "Distinguished paper" award at the CP conference.

Social Program

Visit to the Museum of Lleida of the Diocese and County. Wednesday, October 26, 19:15

The Museum of Lleida of the diocese and county is an institution created by means of an agreement signed on the 1st of August 1997 in the form of an institutional consortium, made up of the regional government of Catalonia (the Generalitat de Catalunya), the provincial government (Diputació) and Lleida City Council, the County Council of Segrià and the Diocese of Lleida. The archives of the old Diocesan Museum of Lleida have been integrated into this Museum, created in 1893 thanks to the mammoth task of conserving our artistic heritage carried out by Bishop Josep Messeguer.

The Museum of Lleida opened its doors on the 24th of December of the same year with the exhibition Prooemium at the Romanesque church of Sant Martí in Lleida. It currently manages the diocesan collection, with important artistic pieces from the area of Lleida and the old diocese of Lleida. The new centre for the museum, which will be installed in the old Llar de Sant Josep, will include the archive from the archaeological collection and the Numismatic Office of the Institute of Lleida Studies of the provincial government, as well as the archive of the artistic collection of the New Cathedral of Lleida.

More information: <http://www.museudelleida.cat/>

Visit to the Seu Vella and the Castle of the King/Suda. Thursday, October, 27, 20:00 - 21:30

The Seu Vella is the most outstanding building at the monumental complex that bears its name and its silhouette, the skyline of the city. It is the old cathedral of Lleida, but it is not alone. In the city centre, on Carrer Major, we find the Seu Nova, the new cathedral. The fate of one brought on the birth of the other.

Defined as one of the best artistic productions of 13th century Catalan architecture and, by extension, of European medieval architecture, the Seu Vella is a singular cathedral that leaves no one indifferent. Its architecture shares the limelight with high quality carvings that are preserved in capitals, cornices, corbels, portals, etc. The substantial remains of preserved mural paintings or the chapels built by prominent families or distinguished church members are a reflection of a prestigious building with a splendid past.

Located on the top of the hill, the Castle of the King is its guardian and sentry. It is popularly known as the Suda, an Arabic word which means a closed urban area. The Suda name referred to the Andalusian fortress built during the 9th century on the site now occupied by the Castle of the King, but it is also the name that documentary sources designate as the noble district that stretched down the hill.

More information: <http://www.turoseuvella.cat>

Conference dinner. Thursday, October, 27, 21:30

The conference dinner will be held at the Seu Vella, in one of the naves of the Canonical House, La Casa de la Volta. The Canonical House is the result of a long construction process that extended from the second half of the 12th century until the 16th century. Located next to the cloister, the Canonical House is organized into different naves, which were occupied over time by the Santa Maria l'Antiga Chapel, the Pia Almoina, the Chapter House, the Decani, the Library, the Notarial Archives, etc. Today they are all open spaces, but in their time of great richness as evidenced by wall paintings from the Pia Almoina now exhibited in the Museu of Lleida, there is the trace of a magnificent balcony still visible on the facade of the building or the Renaissance gates of the Chapter House and Santa Maria l'Antiga.

Conference Program

Day 1 (26/10/2011)

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| 15:00 | Registration |
| 15:30 | Opening |
| 15:45 - 16:45 | Session 1: Robotics and artificial vision <i>Chairman:</i> Ramon López de Mántaras <i>Towards Plant Monitoring Through Next Best View.</i> Sergi Foix, Guillem Alenyà, Carme Torras <i>Determining Where to Grasp Cloth Using Depth Information.</i> Arnau Ramisa, Guillem Alenyà, Francesc Moreno-Noguer, Carme Torras. <i>Biologically Inspired Turn Control in Robot Navigation.</i> Xavier Pérez-Sala, Cecilio Angulo, Sergio Escalera. |
| 16:45 - 17:00 | Coffee break |
| 17:00 - 18:00 | Session 2: Robotics and artificial vision <i>Chairman:</i> Cecilio Angulo <i>Probabilistic Appearance-based Mapping and Localization using the Feature Stability Histogram.</i> Bladimir Bacca, Joaquim Salvi, Xavier Cufí <i>Self-Supervised Clustering for Codebook Construction: An Application to Object Localization.</i> Arturo Ribes, Senshan Ji, Arnau Ramisa, Ramon López de Mántaras. <i>Depth of Valleys Accumulation Algorithm for Object Detection.</i> Jorge Bernal, Javier Sánchez, Fernando Vilariño. |
| 18:15 - 18:45 | ACIA award |
| 19:15 | Visit to the Museum of Lleida |

Day 2 (27/10/2011)

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| 9:45 - 11:00 | Going Beyond NP: New Challenges in Inference Technology Bart Selman |
| 11:15 - 12:15 | Sessió 3: Multiagent systems <i>Chairman:</i> Antonio Moreno <i>A Distributed Norm Compliance Model.</i> Ignasi Gómez-Sebastià, Sergio Álvarez-Napagao, Javier Vázquez. <i>An Assistance Infrastructure for Open MAS.</i> Pablo Almajano, Maite López-Sánchez, Marc Esteva, Inmaculada Rodríguez <i>A Major Depression Patient Evolution Model Based on Qualitative Reasoning.</i> Francisco Múgica, Solmaz Bagherpour, Angela Nebot, Antoni Serrano-Blanco, Luisa Baladón |

12:15 - 12:30 Coffee break

12:30 - 13:30 **Session 4: Negotiation and argumentation**

Chairman: Tere Alsinet

Negotiation Based Branch and Bound and the Negotiating Salesmen Problem. Dave De Jonge, Carles Sierra

Extending the Grounded Semantics by Using Rewriting Systems. Juan Carlos Nieves, Mauricio Osorio, Ulises Cortés.

Argumentation-based Negotiation in t-DeLP-POP. Pere Pardo, Pilar Dellunde, Lluís Godó

13:30 Lunch

15:30 - 17:10 **Session 5: Constraints satisfaction, search and optimization**

Chairman: Carles Mateu

An Inference Model for Analyzing Termination Conditions of Evolutionary Algorithms. David Roche, Débora Gil, Jesús Giraldo.

On the Modularity of Industrial SAT Instances. Carlos Ansótegui, Jordi Levy.

On 2SAT-MaxOnes with Unbalanced Polarity: from Easy Problems to Hard MaxClique Problems. Josep Argelich, Ramon Béjar, Cèsar Fernández, Carles Mateu.

Experimenting with the Instances of the MaxSAT Evaluation. Josep Argelich, Chu Min Li, Felip Manyà, Jordi Planes.

Towards an Efficient Use of Resources in All-Optical Networks. Francesc Guitart, Ramon Béjar, Cèsar Fernández, Carles Mateu.

17:10 - 17:25 Coffee break

17:25 - 18:25 **Session 6: Automatic learning and data mining**

Chairman: Vicenç Torra

An Ontology-based Record Linkage Method for Textual Microdata. Sergio Martínez, Aïda Valls, David Sánchez

Automatic Learning of Preferences in Numeric Criteria. Lucas Marín, Antonio Moreno, David Isern

Lazy Learning Methods for Quality of Life Assessment. Eva Armengol, Pilar Dellunde, Carlo Ratto

18:30 - 19:30 ACIA general meeting

20:00 - 21:30 Visit to the Seu Vella

21:30 Conference dinner

Day 3 (28/10/2011)

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| 9:45 - 11:00 | Global Constraints in Constraint Programming Christian Bessière |
| 11:15 - 12:35 | Session 7: Automatic learning and data mining Chairman: Bea López <i>Gait Recognition by Using Spectrum Analysis on State Space Reconstruction.</i> Albert Samà, Francisco J. Ruiz, Carlos Pérez-López, Andreu Català <i>An Evaluation Framework for Location Privacy.</i> Sergi Martínez-Bea, Vicenç Torra <i>Extending Recommendation Systems with Semantics, Context-Awareness.</i> Victor Codina, Luigi Ceccaroni. <i>A First Approximation to a Cognitive Icon Query By Example Search Engine.</i> Lledó Museros, Ismael Sanz, Zoe Falomir |
| 12:35 - 12:45 | Coffee break |
| 12:45 - 13:45 | ACIA. Doctoral Program Chairman: Carles Sierra Using Experience to Generate New Regulations. Javier Morales, Maite López-Sánchez, Marc Esteva iTutorials for the Interactive Aid of Cognitively Impaired Elderly Population. Carolina Rubio, Ulises Cortés A Distributed Dynamic Norm Monitoring Framework for Evolving Institutions. Ignasi Gómez-Sebastià |
| 13:45 - 14:00 | ACIA demos on I'ECAI-2012 <i>v-mWater: a 3D Virtual Water Rights Market.</i> P. Almajano, T. Trescak, M. Esteva, I. Rodriguez, M. Lopez-Sanchez |
| 14:00 | Closure |

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