

# CPAIOR

*The 5<sup>th</sup> International Conference on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems*

**May 20-23, 2008 – Paris, France**

**Insitut Henri Poincare – 11 rue Pierre et Marie Curie – 75 005 Paris**

## SCHEDULE

**Tuesday May 20, 2008 - Master Class – Amphitheater Hermite**

Time	Session	Speaker
8:15-9:15	Registration / Welcome coffee	
9:15-9:30	Opening remarks	
9:30-10:40	Integrated IP and CP in Sports Scheduling	Mike Trick
10:40-11:10	Coffee break	
11:10-12:20	Anticipatory Algorithms for Decision Making under Exogenous Uncertainty	Pascal Van Hentenryck
12:20-01:50	Lunch	
01:50-03:00	Can formal languages be useful in OR ? The case of the shift scheduling problem.	Louis-Martin Rousseau
03:00-04:10	Building Hybrid Algorithms by Problem Decomposition	Claude LePape
04:10-04:40	Coffee break	
04:40-05:50	Challenges encountered using constraint programming for scheduling	Andrew J. Davenport
05:50-06:00	Wrapping up	

**Wednesday May 21, 2008 – Conference – Amphitheater Hermite**

Time	Session	Speaker
8:15-8:40	Registration / Welcome coffee	
8:40-8:45	Welcomes	François Fages, Laurent Perron, Michael Trick
	<b>Invited Presentation</b>	Chair: Michael Trick, Carnegie Mellon
08:45-9:45	Airline Scheduling: Accomplishments, Opportunities and Challenges	Cynthia Barnhart

09:45-10:15	Coffee break	
<b>Session A</b>	<b>Decomposition and Distributed Approaches</b>	Chair: Laurent Perron, ILOG
10:15-10:40	Multi-stage Benders Decomposition for Optimizing Multicore Architectures	Luca Benini, Michele Lombardi, Marco Mantovani, Michela Milano and Martino Ruggiero
10:40-11:05	From High Level Model to Branch and Price Solution in G12	Jakob Puchinger, Peter J. Stuckey, Mark Wallace and Sebastian Brand
11:05-11:30	Optimal Deployment of Eventually-Serializable Data Services	Laurent Michel, Elaine Sonderegger, Pascal Van Hentenryck and Alexander Shvarstman
11:30-11:45	A Parallel Macro Partitioning Framework for Solving Mixed Integer Programs	Mahdi Namazifar and Andrew Miller
11:45-12:00	Constraint Optimization and Abstraction for Embedded Intelligent Systems	Paul Maier and Martin Sachenbacher
12:00-12:15	A combinatorial auction framework for solving decentralized scheduling problems	Hoong Chuin Lau, Kong-wei Lye and Viet Bang Nguyen
12:15-01:45	Lunch	
<b>Session B</b>	<b>Integrating CP/IP/Local Search</b>	Chair: Barbara Smith, Leeds University
01:45-02:10	Constraint Integer Programming: a New Approach to Integrate CP and MIP	Tobias Achterberg, Timo Berthold, Thorsten Koch and Kati Wolter
02:10-02:35	Cost Propagation -- Numerical Propagation for Optimization Problems	Birgit Grohe and Dag Wedelin
02:35-03:00	Fast and Scalable Domino Portrait Generation	Hadrien Cambazard, John Horan, Eoin O'Mahony and Barry O'Sullivan
03:00-03:15	Using Local Search to Speed Up Filtering Algorithms for Some NP-Hard Constraints	Philippe Galinier, Alain Hertz, Sandrine Paroz and Gilles Pesant
03:15-03:30	CP with ACO	Madjid Khichane, Patrick Albert and Christine Solnon
03:30-03:45	The Polytope of Tree-Structured Binary Constraint Satisfaction Problems	Meinolf Sellmann
03:45-04:15	Coffee break	
<b>Session C</b>	<b>Counting, Symmetry, and Sets</b>	Chair: Yves Deville, UCLouvain
04:15-04:40	Counting Solutions of Knapsack Constraints	Gilles Pesant and Claude-Guy Quimper
04:40-05:05	Integrating Symmetry, Dominance, and Bound-and-Bound in a Multiple Knapsack Solver	Alex Fukunaga
05:05-05:30	A Novel Approach For Detecting Symmetries In CSP Models	Christopher Mears, Maria Garcia de la Banda, Mark Wallace and Bart

		Demoen
05:30-05:45	Counting solutions of integer programs using unrestricted subtree detection	Tobias Achterberg, Stefan Heinz and Thorsten Koch
05:45-06:00	The Steel Mill Slab Design Problem Revisited	Pascal Van Hentenryck and Laurent Michel
06:00-06 :15	Filtering Atmost1 on Pairs of Set Variables	Willem-Jan van Hove and Ashish Sabharwal
8:00-10:30	Social dinner cruise	

**Thursday May 22, 2008 – Conference – Amphitheater Hermite**

Time	Session	Speaker
8:15-8:45	Registration / Welcome coffee	
	<b>Invited Presentation</b>	Chair: François Fages, INRIA
08:45-09:45	30 Years of Constraint Programming	Pascal van Hentenryck
09:45-10:15	Coffee break	
<b>Session D</b>	<b>Constraint Programming</b>	Chair: Claude Le Pape, Schneider Electric
10:15-10:40	New Filtering for the Cumulative Constraint in the Context of Non-Overlapping Rectangles	Nicolas Beldiceanu, Mats Carlsson and Emmanuel Poder
10:40-11:05	Stochastic Satisfiability modulo Theories for Non-linear Arithmetic	Tino Teige and Martin Fränze
11:05-11:30	Simpler and incremental consistency checking and arc consistency filtering algorithms for the weighted spanning tree constraint	Jean-Charles Regin
11:30-11:45	The Weighted CFG Constraint	George Katsirelos, Nina Narodytska and Toby Walsh
11:45-12:00	Propagating separable equalities in an MDD store	Tarik Hadzic, John Hooker and Peter Tiedemann
12:00-12:15	Global Propagation of Practicability Constraints	Thierry Petit and Emmanuel Poder
12:15-01:30	Lunch	
1:30-3:30	Workshops	
3:30-4:00	Coffee break	
4:15-6:00	Workshops	

**Thursday May 22, 2008 – Workshops**

**Open-Source Software for Integer and Constraint Programming (OSSIP) – Amphitheater Hermite**

Time	Session	Speaker
01:30-02:00	Open Source Landscape	<a href="#">Robin Lougee-Heimer</a>
02:00-02:30	The CHOCO constraint programming solver	<a href="#">Narendra Jussien</a>
02:30-03:00	The ECLiPSe Optimization Platform	Joachim Schimpf
03:00-03:30	EasyLocal tools: a family of Software Frameworks for the development and the analysis of Local Search algorithms	<a href="#">Luca Di Gaspero</a>
03:30-04:00	Coffee break	
04:00-04:30	Gecode - an Open Constraint Solving Library	<a href="#">Guido Tack</a>
04:30-05:00	COIN-OR Branch and Cut Solver, CBC	<a href="#">John Forrest</a>
05:00-06:00	Panel Discussion on Integrating IP and CP Solvers	All presenters plus <a href="#">Laurent Michel</a> (moderator), <a href="#">John Hooker</a> , <a href="#">Thorsten Koch</a> , <a href="#">Pascal van Hentenryck</a>

**Bin Packing and Placement Constraints (BPPC) – ENSCP Amphitheater Chaudron**

Time	Session	Speaker
01:30-02:30	Invited talk - Exact methods for rectangle placement problems	François Clautiaux
02:30-03:00	Using Global Constraints for Rectangle Packing	Helmut Simonis and Barry O'Sullivan
03:00-03:30	Modeling Irregular Shape Placement Problems with Regular Constraints	Mikael Z. Lagerkvist and Gilles Pesant
03:30-04:00	Coffee Break	
04:00-04:30	Two-dimensional Pickup and Delivery Routing Problem with Loading Constraints	Arnaud Malapert, Christelle Gueret, Narendra Jussien, Andre Langevin and Louis-Martin Rousseau
04:30-05:00	An Efficient Method for Strip Packing Based on Local Search and a Randomized Best-Fit	Bertrand Neveu and Gilles Trombetti
05:00-05:30	Generating Stable Loading Patterns for Pallet Loading Problems	Waldemar Kocjan and Kenneth Holmström
05:30-06:00	Repairing Bin Packing Constraints	Alex Fukunaga

## Constraint-Based Methods for Bioinformatics (WCB) – Room 314

Time	Session	Speaker
01:30-01:50	Introduction: Perspectives of the area	Rolf Backofen
	<b>Session: Biological Networks</b>	
01:50-02:15	Detecting inconsistencies in large influence networks with Answer Set Programming	Philippe Veber, Sven Thiele, Martin Gebser, B. Usadel, and T. Schaub
02:15-02:40	Combinatorial Optimisation to Design Gene Regulatory Networks	Guillermo Rodrigo, Javier Carrera, and Alfonso Jaramillo
02:40-03:05	Investigating Gene Regulatory Networks Qualitative Properties using Constraints Programming	Damien Eveillard, Jonathan Fromentin, and Olivier Roux
03:05-03:30	Finding minimal P/T-invariants as a CSP	Sylvain Soliman
03:30-04:00	Coffee Break	
	<b>Session: Combinatorial Problems</b>	
03:55-04:20	A constraint-based approach to the phase problem in X-ray crystallography	Corinna Brinkmann and Alexander Bockmayr
04:20-04:45	A Pseudo-Boolean Solution to the Maximum Quartet	Antonio Morgado and Joao Marques-Silva
04:45-05:10	Generic ILP vs Specialized 0-1 ILP for Haplotype Inference	Ana Graca, Joao Marques-Silva, Ines Lynce, and Arlindo L. Oliveira
05:10-05:35	Stochastic local search for large-scale instances of the Haplotype Inference Problem by Parsimony	Luca Di Gaspero and Andrea Roli
05:35-06:00	A hybrid approach mixing local search and constraint programming applied to the protein structure prediction problem	Raffaele Cipriano, Alessandro Dal Palu', and Agostino Dovier

**Friday May 23, 2008 – Conference – Amphitheater Hermite**

<b>Time</b>	<b>Session</b>	<b>Speaker</b>
8:15-8:45	Registration / Welcome coffee	
	<b>Invited Presentation</b>	Chair: Laurent Perron, ILOG
08:45-09:45	Selected Challenges from Distribution and Commerce in the Airline and Travel Industry	François Laburthe
09:45-10:15	Coffee break	
<b>Session A</b>	<b>Scheduling and Networks</b>	Chair: Andrew Davenport, IBM
10:15-10:40	A Hybrid Constraint Programming / Local Search Approach to the Job-Shop Scheduling Problem	Jean-Paul Watson and Chris Beck
10:40-11:05	Gap Reduction Techniques for Online Stochastic Project Scheduling	Grégoire Dooks and Pascal Van Hentenryck
11:05-11:30	Amsaa: A Multistep Anticipatory Algorithm for Online Stochastic Combinatorial Optimization	Luc Mercier and Pascal Van Hentenryck
11:30-11:45	Connections in Networks: A Hybrid Approach	Carla Gomes, Willem-Jan van Hoeve and Ashish Sabharwal
11:45-12:00	Mobility Allowance Shuttle Transit (MAST) Services: MIP formulation and strengthening with logic constraints	Luca Quadrioglio, Maged Dessouky and Fernando Ordonez
12:00-12:15	Rapidly Solving an Online Sequence of Maximum Flow Problems	Doug Altner and Ozlem Ergun
12:15-01:30	Lunch	
<b>Session B</b>	<b>Search</b>	Chair: Laurent Michel, University of Connecticut
01:45-02:10	Leveraging Belief Propagation, Backtrack Search, and Statistics for Model Counting	Lukas Kroc, Ashish Sabharwal and Bart Selman
02:10-02:35	The Accuracy of Search Heuristics: An Empirical Study on Knapsack Problems	Daniel Hogson Leventhal and Meinolf Sellmann
02:35-03:00	Fitness-Distance Correlation and Solution-Guided Multi-Point Constructive Search for CSPs	Ivan Heckman and Chris Beck
03:00-03:15	Hybrid Variants for Iterative Flattening Search	Angelo Oddi, Amedeo Cesta, Nicola Policella and Stephen Smith
03:15-03:30	Guiding stochastic search by dynamic learning of the problem topography	Yehuda Naveh
03:30-03:45	A tabu search method for interval constraints	Charlotte Truchet, Marc Christie and Jean-Marie Normand
03:45-04:15	Coffee break	

<b>Session G</b>	<b>Chair: Helmut Simonis, University College Cork</b>	Applications
04:15-04:30	Efficient Haplotype Inference with Combined CP and OR Techniques	Ana Graça, Joao Marques-Silva, Ines Lynce and Arlindo Oliveira
04:30-04:45	A Hybrid Approach for Solving Shift-Selection and Task-Sequencing Problems	Amy Cohn, Ada Barlatt and Oleg Gusikhin
04:45-05:00	Integration of CP and Compilation Techniques for Instruction Sequence Test Generation	Boris Gutkovich
05:00-05:15	Solving a Log-Truck Scheduling Problem with Constraint Programming	Nizar El Hachemi, Michel Gendreau and Louis-Martin Rousseau
05:15-05:30	CPAIOR09 and Farewells	
05:30	End of conference	

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# CP-AI-OR 2008

**Paris**  
May 20-23,  
2008

Fifth International Conference on Integration  
of AI and OR Techniques in  
Constraint Programming for  
Combinatorial Optimization Problems

**Registration deadline:**

May 10, 2008

<http://contraintes.inria.fr/CPAIORo8>

**Workshops:**

- Open-Source Software for Integer and Constraint Programming, OSSICP
- Bin Packing and Placement Constraints, BPPC
- Constraint-Based Methods for Bioinformatics, WCB

**Conference Chairs**

François Fages (INRIA) and Laurent Perron (ILOG)

**Program Chairs**

Laurent Perron (ILOG) and Michael Trick (Carnegie Mellon)

**Master Class Chairs**

Cynthia Barnhart (MIT) and Laurent Michel (UConn)

**Plenary Talks**

Cynthia Barnhart (MIT), François Laburthe (Amadeus) and Pascal Van Hentenryck (Brown University)

