CP 2004 Program

Tenth International Conference on Principles and Practice of Constraint Programming

September 27 – October 1, 2004
Toronto, Canada

Sponsors
### Sunday, September 26, 2004

17:00–20:00 **Registration**

### Monday, September 27, 2004

<table>
<thead>
<tr>
<th>Time</th>
<th>Workshops</th>
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</thead>
<tbody>
<tr>
<td>8:00–17:00</td>
<td><strong>Registration</strong></td>
</tr>
</tbody>
</table>
| 9:00–10:30      | **Morning workshops**<br>
|                 | *Cooperative Solvers in Constraint Programming*<br>
|                 | Laurent Granvilliers and Eric Monfroy<br>
|                 | Room: Trinity Ballroom, I<br>
|                 | *Modelling and Reformulating CSPs*<br>
|                 | Alan Frisch and Ian Miguel<br>
|                 | Room: Trinity Ballroom, II<br>
|                 | *Constraint Propagation and Implementation*<br>
|                 | Marc van Dongen, Yuan Lin Zhang, Richard J. Wallace<br>
|                 | Room: Trinity Ballroom, III<br>
| 10:30–11:00     | **Coffee Break**                                                          |
| 11:00–12:30     | **Morning workshops** (continued)<br>
|                 | *Preferences and Soft Constraints*<br>
|                 | Stefano Bistarelli and Francesca Rossi<br>
|                 | Room: Trinity Ballroom, IV<br>
|                 | *Symmetry and CSPs*<br>
|                 | Warwick Harvey and Zeynep Kiziltan<br>
|                 | Room: Trinity Ballroom, V<br>
|                 | *CSP Techniques with Immediate Application*<br>
|                 | Roman Barták, Ulrich Junker, Marius-Calin Silaghi, Markus Zanker<br>
|                 | Room: Bay<br>
|                 | *Distributed Constraint Reasoning*<br>
|                 | Pragnesh Jay Modi<br>
|                 | Room: Simcoe<br>
| 12:30–14:00     | **Lunch Break (on your own)**                                            |
| 14:00–15:30     | **Afternoon workshops**<br>
|                 | *Constraint Solving Under Change and Uncertainty*<br>
|                 | Chris Beck, Ken Brown, Gerard Verfaillie<br>
|                 | Room: Trinity Ballroom, I<br>
|                 | *Local Search Techniques in Constraint Satisfaction*<br>
|                 | Justin Pearson, Magnus E gren, Markus Bohlin<br>
|                 | Room: Trinity Ballroom, II<br>
| 15:30–16:00     | **Coffee Break**                                                          |
| 16:00–17:30     | **Afternoon workshops** (continued)<br>
|                 | *All day workshops* (continued)<br>
|                 | **Doctoral Program**<br>
|                 | (see separate program)                                                   |
| 17:30–19:00     | **Conference Opening Reception**<br>
|                 | Room: Grand Ballroom, Salons C&D<br>

Please note that there may be slight variations in the timings of breaks for each workshop depending on how each event is scheduled by the respective chairs. Delegates are advised to check with each individual workshop web page for precise schedule details for each event.
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<tr>
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<tr>
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<td><strong>Workshops</strong></td>
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<td>Coffee Break</td>
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<tr>
<td>16:00–16:40</td>
<td><strong>Doctoral Program</strong></td>
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<tr>
<td>17:00–17:50</td>
<td><strong>Doctoral Tutorial</strong></td>
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<tr>
<td>17:30–19:00</td>
<td><strong>Conference Opening Reception</strong></td>
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</table>

**Doctoral Program**
Session Chair: Willem Jan van Hoeve  
Room: Trinity Ballroom, III

- Exploiting Symmetries via Permutations for PC Board Manufacturing  
  Roland Martin
- A BDD-based Approach to Interactive Configuration  
  Tarik Hadzic
- Relation Variables in Qualitative Spatial Reasoning  
  Sebastian Brand
- Constraining Special-Purpose Data Structures  
  Peter Zoeteweij
- Extending Super Solutions  
  Emmanuel Hebrard

**Workshops**  
(continued)

**Doctoral Program**
Session Chair: Kristen Brent Venable  
Room: Trinity Ballroom, III

- Explanations and Numeric CSPs  
  Guillaume Rochart
- Long-Term Learning for Algorithm Control  
  Tom Carchrae
- Machine Learning for Portfolio Selection using Structure at the Instance Level  
  Cormac Gebruers and Alessio Guerri

**Workshops**  
(continued)

**Doctoral Tutorial**  
Session Chair: Michela Milano  
Room: Trinity Ballroom, III

- How to review a paper  
  Boi Faltings

**Conference Opening Reception**  
Room: Grand Ballroom, Salons C&D
### Morning

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<tr>
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<td>8:00–17:00</td>
<td><strong>Registration</strong></td>
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<tr>
<td>8:30–9:30</td>
<td><strong>Invited Talk: Jean-François Puget, ILOG</strong></td>
<td>Grand Ballroom, Salons C&amp;D</td>
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<tr>
<td></td>
<td><em>Constraint Programming’s Next Challenge: Simplicity of Use</em></td>
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<td></td>
<td>Session Chair: Mark Wallace</td>
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<td></td>
<td>Room: Grand Ballroom, Salons C&amp;D</td>
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<tr>
<td>9:30–9:35</td>
<td><strong>Announcements</strong></td>
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<tr>
<td>9:35–10:00</td>
<td><strong>Distinguished Papers</strong></td>
<td>Grand Ballroom, Salons C&amp;D</td>
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<tr>
<td></td>
<td>Session Chair: Alan Frisch</td>
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<tr>
<td>9:35–10:25</td>
<td><strong>Consistency and Random Constraint Satisfaction Models with a High Constraint Tightness</strong></td>
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<td></td>
<td>Yong Gao and Joseph Culberson</td>
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<tr>
<td>10:00–10:25</td>
<td><strong>Statistical Regimes Across Constrainedness Regions</strong></td>
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<tr>
<td></td>
<td>Carla Gomes, César Fernández, Bart Selman, Christian Bessière</td>
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<tr>
<td>10:25–10:45</td>
<td><strong>Coffee Break</strong></td>
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<tr>
<td>10:45–11:10</td>
<td><strong>Track 1</strong></td>
<td>Grand Ballroom, Salons C&amp;D</td>
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<tr>
<td></td>
<td>Session Chair: Gilles Pesant</td>
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<tr>
<td></td>
<td>Improved Algorithms for the Global Cardinality Constraint</td>
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<td></td>
<td>Claude-Guy Quimper, Alejandro Lopez-Ortiz, Peter van Beek, Alexander Golynski</td>
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<tr>
<td>11:10–11:35</td>
<td><strong>The Cardinality Matrix Constraint</strong></td>
<td>Grand Ballroom, Salons C&amp;D</td>
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<tr>
<td></td>
<td>Jean-Charles Régin and Carla Gomes</td>
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<tr>
<td>11:40–12:05</td>
<td><strong>Track 1</strong></td>
<td>Trinity Ballroom, I–II</td>
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<td></td>
<td>Session Chair: Berthe Choueiry</td>
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<td></td>
<td>Quality of LP-based Approximations for Highly Combinatorial Problems</td>
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<td></td>
<td>Lucian Leahu and Carla Gomes</td>
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<tr>
<td>12:05–12:30</td>
<td><strong>Track 2</strong></td>
<td>Trinity Ballroom, I–II</td>
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<tr>
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<td>Session Chair: Hubie Chen</td>
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<td></td>
<td>Decomposition and Learning for a Real Time Task Allocation Problem</td>
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<td></td>
<td>Hadrien Cambazard, Pierre-Emmanuel Hladik, Anne-Marie Déplanché, Narendra Jussien, Yvon Trinquet</td>
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<tr>
<td>12:30–14:00</td>
<td><strong>Lunch Break</strong></td>
<td>on your own</td>
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# Tuesday, September 28, 2004

## Afternoon

### 12:30–14:00  
**Lunch Break** (on your own)

### 14:00–15:30

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<tr>
<th>Tutorials 1</th>
<th>Tutorials 2</th>
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<tr>
<td>Session Chair: Bill Havens</td>
<td>Session Chair: Michael Trick</td>
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<tr>
<td>Room: Grand Ballroom, Salons C&amp;D</td>
<td>Room: Trinity Ballroom, I–II</td>
</tr>
<tr>
<td><strong>Online Stochastic Optimization</strong></td>
<td><strong>Modelling Problems in Constraint Programming</strong></td>
</tr>
<tr>
<td>Pascal Van Hentenryck and Russell Bent</td>
<td>Jean-Charles Régis</td>
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### 15:30–16:00  
**Coffee Break**

### 14:00–15:30

<table>
<thead>
<tr>
<th>Track 1</th>
<th>Doctoral Program 2</th>
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<tbody>
<tr>
<td>Session Chair: Ian Miguel</td>
<td>Session Chair: Petr Vilim</td>
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<tr>
<td>Room: Grand Ballroom, Salons C&amp;D</td>
<td>Room: Trinity Ballroom, I–II</td>
</tr>
<tr>
<td><strong>Disjoint, Partition and Intersection Constraints for Set and Multiset Variables</strong></td>
<td><strong>Strong Cost-based Filtering in a Lagrange Decomposition Setting</strong></td>
</tr>
<tr>
<td>Christian Bessière, Emmanuel Hebrard, Brahim Hnich, Toby Walsh</td>
<td>Wilhelm Cronholm</td>
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<tr>
<td><strong>Modelling Problems in Constraint Programming</strong></td>
<td><strong>Improving the Applicability of Adaptive Consistency: Preliminary Results</strong></td>
</tr>
<tr>
<td>Jean-Charles Régis</td>
<td>Marti Sanchez Fliba</td>
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### 16:00–16:25

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<tr>
<th>Track 1</th>
<th>Track 2</th>
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<tbody>
<tr>
<td>Session Chair: Christian Schulte</td>
<td>Session Chair: Rolf Backofen</td>
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<tr>
<td>Room: Grand Ballroom, Salons C&amp;D</td>
<td>Room: Trinity Ballroom, I–II</td>
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<tr>
<td><strong>Disjoint, Partition and Intersection Constraints for Set and Multiset Variables</strong></td>
<td><strong>Improved Bound Computation in Presence of Several Clique Constraints</strong></td>
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<tr>
<td>Christian Bessière, Emmanuel Hebrard, Brahim Hnich, Toby Walsh</td>
<td>Jean-François Puget</td>
</tr>
<tr>
<td><strong>A Hypergraph Separator based Variable Ordering Heuristic for Solving Real World SAT Instances</strong></td>
<td><strong>Quantified Constraint Satisfaction and 2-Semilattice Polymorphisms</strong></td>
</tr>
<tr>
<td>Wei Li</td>
<td>Hubie Chen</td>
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### 16:25–16:50

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<th>Track 1</th>
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<tr>
<td>Session Chair: Ian Miguel</td>
<td>Session Chair: Rolf Backofen</td>
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<tr>
<td>Room: Grand Ballroom, Salons C&amp;D</td>
<td>Room: Trinity Ballroom, I–II</td>
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<tr>
<td><strong>Global Constraints for Integer and Set Value Precedence</strong></td>
<td><strong>Symbolic Decision Procedures for QBF</strong></td>
</tr>
<tr>
<td>Y.C. Law and J.H.M. Lee</td>
<td>Guoqiang Pan and Moshe Y. Vardi</td>
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## Evening

### Doctoral Program Banquet, Faculty Club, University of Toronto

By invitation only. Dinner is at 7:30 pm. The faculty club is about a 20 minute walk from the hotel at 41 Willcocks Street. Directions from the hotel: Walk west on Dundas Street, then north on Spadina Avenue, then east on Willcocks Street (the street is marked on the map given in your registration packet).

**Doctoral Program Banquet Speaker: Pascal Van Hentenryck**  
**Red Rackham’s Treasure**  
Hosted by: Michela Milano
# Wednesday, September 29, 2004

<table>
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<tr>
<th>Time</th>
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</table>
| 8:30–  9:30| **Invited Talk: Helmut Simonis, IC Parc**  
  Challenges for Constraint Programming in Networking  
  Session Chair: Pascal Van Hentenryck  
  Room: Grand Ballroom, Salons C&D |
| 9:30–  9:35| **Announcements**                                                    |
| 9:35–10:00 | **Distinguished Papers**  
  Session Chair: Jean-Charles Régin  
  Room: Grand Ballroom, Salons C&D |
| 10:00–10:25| **Constraint-Based Combinators for Local Search**  
  Pascal Van Hentenryck, Laurent Michel, Liyuan Liu |
| 10:25–10:45| **Coffee Break**                                                      |
| 10:45–11:10| **Track 1**  
  Session Chair: Jean-Francois Puget  
  Room: Grand Ballroom, Salons C&D  
  |  
  **Track 2**  
  Session Chair: Jimmy Lee  
  Room: Trinity Ballroom, I–II |
| 10:45–11:10| **Hybrid Set Domains to Strengthen Constraint Propagation and Reduce Symmetries**  
  Andrew Sadler and Carmen Gervet  
  |  
  **Heuristic Selection for Stochastic Search Optimization: Modeling Solution Quality by Extreme Value Theory**  
  Vincent A. Cicirello and Stephen F. Smith |
| 11:10–11:35| **Set Domain Propagation Using ROBDDs**  
  Vitaly Lagoon and Peter J. Stuckey  
  |  
  **ID Walk: A Candidate List Strategy with a Simple Diversification Device**  
  Bertrand Neveu, Gilles Trombettoni, Fred Glover |
| 11:40–12:05| **Track 1**  
  Session Chair: Neil Yorke-Smith  
  Room: Grand Ballroom, Salons C&D  
  |  
  **Track 2**  
  Session Chair: Ian Gent  
  Room: Trinity Ballroom, I–II |
| 11:40–12:05| **A Hybrid Method for Planning and Scheduling**  
  John Hooker  
  |  
  **Efficient Strategies for (Weighted) Maximum Satisfiability**  
  Zhao Xing and Weixiong Zhang |
| 12:05–12:30| **Theoretical Foundations of CP-based Lagrangian Relaxation**  
  Meinolf Sellmann  
  |  
  **A Complete Characterization of Complexity for Boolean Constraint Optimization Problems**  
  David Cohen, Martin Cooper, Peter Jeavons |
| 12:05–12:30| **Lunch Break (on your own)**                                       |
| Afternoon  | **Excursions**  
  There is a choice of self-guided group excursions. The meeting points for the excursions will be in the lobby of the conference area (the coffee break area). For more information and for the departure times of the excursions, see the information provided in your registration packet. |
| Evening    | **Conference Banquet, CN Tower**  
  First bus leaves at 7:15 pm. The buses will park on Bay Street, the street in front of the hotel.  
  Dinner is at 8:30 pm.  
  Last bus returns to hotel at 11:30 pm. |
## Thursday, September 30, 2004

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<th>Time</th>
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<tr>
<td>8:30–9:30</td>
<td><strong>Invited Talk: Bart Selman, Cornell University</strong>&lt;br&gt;Algorithmic adventures at the interface of computer science, statistical physics, and combinatorics&lt;br&gt;Session Chair: Rina Dechter&lt;br&gt;Room: Trinity Ballroom, I–III</td>
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<tr>
<td>9:30–10:25</td>
<td><strong>Presentations</strong>&lt;br&gt;Session Chair: Mark Wallace&lt;br&gt;Room: Trinity Ballroom, I–III&lt;br&gt;CP 2005 Presentation&lt;br&gt;CP-AI-OR 2005 Presentation&lt;br&gt;CP Organizing Committee Presentation&lt;br&gt;Constraints Journal Presentation</td>
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<tr>
<td>10:25–10:45</td>
<td><strong>Coffee Break</strong></td>
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<tr>
<td>10:45–11:10</td>
<td><strong>Track 1</strong> <strong>Session Chair: Pedro Barahona</strong>&lt;br&gt;Room: Trinity Ballroom, I–III&lt;br&gt;Speeding Up Constraint Propagation&lt;br&gt;Christian Schulte and Peter J. Stuckey&lt;br&gt;Modelling Chemical Reactions using Constraint Programming and Molecular Graphs&lt;br&gt;Christine Wei Wu</td>
</tr>
<tr>
<td>11:10–11:35</td>
<td><strong>Track 1</strong> <strong>Session Chair: Laurent Michel</strong>&lt;br&gt;Room: Trinity Ballroom, I–III&lt;br&gt;Counting-Based Look-Ahead Schemes for Constraint Satisfaction&lt;br&gt;Kalev Kask, Rina Dechter, Vibhav Gogate&lt;br&gt;Extending Local Search Using Maximal Independent Sets&lt;br&gt;Joel Gompert&lt;br&gt;Automating the Effective Refinement of Sets and Multisets&lt;br&gt;Chris Jefferson</td>
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<tr>
<td>11:40–12:05</td>
<td><strong>Track 2</strong> <strong>Session Chair: Narendra Jussien</strong>&lt;br&gt;Room: Trinity Ballroom, IV–V&lt;br&gt;A Regular Language Membership Constraint for Finite Sequences of Variables&lt;br&gt;Gilles Pesant&lt;br&gt;Bounding the Resource Availability of Partially Ordered Events with Constant Resource Impact&lt;br&gt;Jeremy Frank</td>
</tr>
<tr>
<td>12:05–12:30</td>
<td><strong>Track 2</strong> <strong>Session Chair: Laurent Michel</strong>&lt;br&gt;Room: Trinity Ballroom, I–III&lt;br&gt;Deriving Filtering Algorithms from Constraint Checkers&lt;br&gt;Nicolas Beldiceanu, Mats Carlsson, Thierry Petit&lt;br&gt;Propagation Guided Large Neighborhood Search&lt;br&gt;Laurent Perron, Paul Shaw, Vincent Furnon</td>
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<tr>
<td>12:30–14:00</td>
<td><strong>Lunch Break (on your own)</strong></td>
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<tr>
<td>14:00–15:30</td>
<td><strong>Tutorials 1</strong> <strong>Session Chair: Steve Prestwich</strong>&lt;br&gt;Room: Trinity Ballroom, I–III&lt;br&gt;Symmetry Breaking in Constraint Programming&lt;br&gt;Ian Gent and Jean-Francois Puget&lt;br&gt;Distributed Constraints: Algorithms, Performance, Communication&lt;br&gt;Amnon Meisels</td>
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<tr>
<td>15:30–16:00</td>
<td><strong>Coffee Break</strong></td>
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<tr>
<td>16:00–16:55</td>
<td><strong>Poster &amp; Demo Introductions</strong> <strong>Session Chair: Toby Walsh</strong>&lt;br&gt;Room: Trinity Ballroom, I–III&lt;br&gt;See Appendix for listing of posters and demos</td>
</tr>
<tr>
<td>17:05–18:00</td>
<td><strong>Poster &amp; Demo Session</strong>&lt;br&gt;Room: Grand Ballroom, Salons C&amp;D (these rooms will be available from 15:00 onwards for participants to setup their posters and demos prior to the start of the Poster &amp; Demo Session).</td>
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<td>18:00–20:30</td>
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| 8:30– 9:30 | **Invited Talk: Andreas Podelski, MPI**  
*Constraints in Program Analysis and Verification*  
Session Chair: Stefano Bistarelli  
Room: Trinity Ballroom, I–III |
| 9:30– 9:35 | **Announcements** |
| 9:35–10:00 | **Track 1**  
Session Chair: Robert Morris  
Room: Trinity Ballroom, I–III  
*Backtrack-Free Search for Real-Time Constraint Satisfaction*  
J. Christopher Beck, Tom Carchrae, Eugene C. Freuder, Georg Ringwelski |
| 9:35–10:00 | **Track 2**  
Session Chair: Javier Larrosa  
Room: Trinity Ballroom, IV–V  
*Full Dynamic Substitutability by SAT Encoding*  
Steven Prestwich |
| 10:00–10:25 | **Track 1**  
Session Chair: Nicolas Beldiceanu  
Room: Trinity Ballroom, I–III  
*Streamlined Constraint Reasoning*  
Carla Gomes and Meinolf Sellmann |
| 10:00–10:25 | **Track 2**  
Session Chair: Pedro Meseguer  
Room: Trinity Ballroom, IV–V  
*Solving Non-clausal Formulas with DPLL search*  
Christian Thiffeault, Fahiem Bacchus, Toby Walsh |
| 10:25–10:45 | **Coffee Break** |
| 10:45–11:10 | **Track 1**  
Session Chair: Nicolas Beldiceanu  
Room: Trinity Ballroom, I–III  
*A Domain Consistency Algorithm for the Stretch Constraint*  
Lars Hellsten, Gilles Pesant, Peter van Beek |
| 10:45–11:10 | **Track 2**  
Session Chair: Pedro Meseguer  
Room: Trinity Ballroom, IV–V  
*Leveraging the Learning Power of Examples in Automated Constraint Acquisition*  
Christian Bessière, Remi Coletta, Eugene C. Freuder, Barry O'Sullivan |
| 11:10–11:35 | **Track 1**  
Session Chair: Makoto Yokoo  
Room: Trinity Ballroom, I–III  
*A Hyper-Arc Consistency Algorithm for the Soft Alldifferent Constraint*  
Willem Jan van Hoeve |
| 11:10–11:35 | **Track 2**  
Session Chair: Gérard Verfaillie  
Room: Trinity Ballroom, IV–V  
*Financial Portfolio Optimisation*  
Pierre Flener, Justin Pearson, Luis G. Reyna |
| 11:40–12:05 | **Track 1**  
Session Chair: Albert Atserias, Phokion G. Kolaitis, Moshe Y. Vardi  
Room: Trinity Ballroom, I–III  
*Constraint Propagation as a Proof System*  
Albert Atserias, Phokion G. Kolaitis, Moshe Y. Vardi |
| 11:40–12:05 | **Track 2**  
Session Chair: Gérard Verfaillie  
Room: Trinity Ballroom, IV–V  
*Controllability of Soft Temporal Constraint Problems*  
Francesca Rossi, Kristen Brent Venable, Neil Yorke-Smith |
| 12:05–12:30 | **Track 1**  
Session Chair: Albert Atserias, Phokion G. Kolaitis, Moshe Y. Vardi  
Room: Trinity Ballroom, I–III  
*Understanding Random SAT: Beyond the Clauses-to-Variables Ratio*  
Eugene Nudelman, Alex Devkar, Yoav Shoham, Kevin Leyton-Brown |
| 12:05–12:30 | **Track 2**  
Session Chair: Gérard Verfaillie  
Room: Trinity Ballroom, IV–V  
*Strategies for Global Optimization of Temporal Preferences*  
Paul Morris, Robert Morris, Lina Khatib, Sailesh Ramakrishnan, Andrew Bachmann |
| 12:30–14:00 | **Lunch Break** (on your own) |
| 14:00–14:25 | **Track 1**  
Session Chair: Chris Beck  
Room: Trinity Ballroom, I–III  
*Completable Partial Solutions in Constraint Programming and Constraint-based Scheduling*  
András Kovács and József Váncza |
| 14:00–14:25 | **Track 2**  
Session Chair: Peter van Beek  
Room: Trinity Ballroom, IV–V  
*How to manage your supervisor (and your career)*  
Toby Walsh |
| 14:25–14:50 | **Track 1**  
Session Chair: Chris Beck  
Room: Trinity Ballroom, I–III  
*Generating Robust Schedules through Chaining*  
N. Policella, A. Oddi, S.F. Smith, A. Cesta |
| 14:25–14:50 | **Track 2**  
Session Chair: Peter van Beek  
Room: Trinity Ballroom, IV–V  
*Softly Constrained CP nets*  
Kristen Brent Venable  
*n-Kings for Dynamic Systems*  
Konstantin Arthiouchine |
| 15:00–15:30 | **Doctoral Program 2**  
Session Chair: Roland Martin  
Room: Trinity Ballroom, IV–V  
*Softly Constrained CP nets*  
Kristen Brent Venable  
*n-Kings for Dynamic Systems*  
Konstantin Arthiouchine |
| 15:00–15:30 | **Doctoral Tutorial 2**  
Session Chair: Peter van Beek  
Room: Trinity Ballroom, IV–V  
*How to manage your supervisor (and your career)*  
Toby Walsh |
Invited Talks

Constraint Programming’s Next Challenge: Simplicity of Use
Jean-François Puget, ILOG
8:30–9:30, Tuesday, September 28, 2004

Abstract: Constraint programming (CP) has been successfully used for solving a wide range of industrial problems. This has legitimated a lot of investment in public research about CP. Unfortunately, we think that most of this research overlooks several important issues that CP users face in the industrial world. These issues are quite easily spotted when a comparison with the practice of users of mathematical programming (MP) software is done. As the manager of the group that develops both CP tools such as ILOG Solver, and MP tools such as ILOG CPLEX, we are in a good position to perform such a comparison. It clearly appears that the motivation and focus of the two communities (CP) and (MP) are quite different. MP research community deal with algorithms, that take as input a problem statement, and output a (optimal) solution for this problem. On the other hand, CP community is actively developing tools from which algorithms can be designed for a given problem. Therefore, developing a CP based solution usually requires selecting a set of tools for search, constraint reasoning (propagation), explanations, modeling, etc. This puts a lot of burden on the users of CP systems. We believe that this results in CP tools being less and less used in industry, despite their power. In order to try to reverse this trend, we urge the CP community to look at the following defects of current CP systems:

- One must change the way a problem is modelled in order to benefit from CP improvements.
- Default search code provided in CP systems is not good enough.
- Optimization is not currently at the core of CP systems.
- There is very little research done on modeling languages for CP.
- There is no standard way of representing CP models.

Challenges for Constraint Programming in Networking
Helmut Simonis, IC Parc
8:30–9:30, Wednesday, September 29, 2004

Abstract: In this talk I will present a number of problems for network design, planning and analysis and show how they can be addressed with different hybrid CP solutions. Clearly, this problem domain is of huge practical importance, but it also provides us with interesting, complex problem structures. CP directly competes with MILP and local search approaches to these problems, with best results often obtained by a combination of different solution techniques. Teams at Parc Technologies and IC-Parc have been working in this field over the last years, with a number of applications now embedded in commercial products.

Algorithmic Adventures at the Interface of Computer Science, Statistical Physics, and Combinatorics
Bart Selman, Cornell University
8:30–9:30, Thursday, September 30, 2004

Abstract: I will cover a series of recent developments in the design and study of combinatorial algorithms. Among the most exciting new approaches is a new class of probabilistic methods coming out of statistical physics and information theory. I will also cover recent progress in sampling from combinatorial spaces using random walks and Markov chain methods.

Constraints in Program Analysis and Verification
Andreas Podelski, MPI
8:30–9:30, Friday, October 1, 2004

Abstract: Program verification is a classical research topic in core computer science. (How many Turing Award winners were not involved in verification?) Recent developments have lead to push-button software verification tools that are industrially used e.g. to check interface specifications of device drivers. These developments are based on program analysis, model checking and constraint solving. In the talk I will explain how the three methods are combined. We start with the point of view that a program is a constraint.
Modeling Problems in Constraint Programming
Jean-Charles Régis, ILOG
14:00–15:30, Tuesday, September 28, 2004

Abstract: In this tutorial the principles of modeling problems in constraint programming are discussed. An overview of the most important techniques to efficiently model a problem is given. The latest theoretical results are addressed as well as areas in which breakthroughs are about to happen. A large part of the tutorial will be dedicated to the discussion of real-life applications and the difficulties that arise when one wants to build such an application. Satisfaction, optimization and over-constrained problems will be successively considered. Several examples coming from complex problems will be detailed and different models will be compared in order to identify what is crucial for the success of an application. Some usual difficulties will be investigated in order to avoid common mistakes and to lead to new possible directions of research.

Symmetry Breaking in Constraint Programming
Ian Gent, U. of St. Andrews
Jean-François Puget, ILOG
14:00–15:30, Thursday, September 30, 2004

Abstract: The development of symmetry breaking techniques started more than a decade ago in the CP community. Symmetries are transformations that map a CSP into an equivalent CSP. Symmetries have an extreme adverse effect on the efficiency of tree search methods for CSPs. If the problem is difficult, it may be the case that all symmetrical variants of every dead end encountered during the search must be explored before a solution can be found. Dealing with this effect is called symmetry breaking. Symmetry breaking techniques that will be covered in the tutorial include the following list:

- Addition of symmetry breaking constraint before the search starts or during the search (lexicographic constraints, SBDS method)
- Dominance detection (SBDD)
- Use of computational group theory for symmetry breaking
- Problems and research, e.g. combining symmetry breaking methods, pros and cons of methods

In addition to these, we will describe some application areas where symmetry breaking techniques have been successfully applied.

Online Stochastic Optimization
Pascal Van Hentenryck and Russell Bent, Brown University
14:00–15:30, Tuesday, September 28, 2004

Abstract: Online optimization problems arise naturally in many application areas and have received increasing attention in recent years. Contrary to offline optimization, the data is not available a priori in online optimization. Rather it is incrementally revealed during algorithm execution. In many online optimization problems, the data is a set of requests which are revealed over time and the algorithm must decide which request to process next. Moreover, in general, the time to make a decision is severely constrained, so that only a few offline optimizations can be performed at decision time and in between decisions. Online problems of this kind arise in many applications, including vehicle routing, taxi dispatching, packet scheduling, and online deliveries. This tutorial reviews recent progress in this area. It gives an overview of a general framework for online stochastic optimization and shows how various approaches can be viewed as specific instantiations of the framework. The tutorial also reviews the benefits of constraint programming in this context, as well as the theoretical and practical challenges to be addressed.

Distributed Constraints – Algorithms, Performance, Communication
Amnon Meisels, Ben-Gurion University
14:00–15:30, Thursday, September 30, 2004

Abstract: Distributed constraints satisfaction problems (DisCSPs) are composed of agents, each holding its local constraints network, that are connected by constraints among variables of different agents. Agents assign values to variables, attempting to generate a locally consistent assignment that is also consistent with all constraints between agents. A search algorithm on DisCSP is thus a distributed algorithm, run by agents that communicate by sending and receiving messages. Many real world problems are naturally modeled by a distributed constraints network. University timetabling is composed of multiple departments that schedule their classes independently, but, are connected by constraints due to sharing of classes and classrooms. The tutorial talk will introduce distributed constraint satisfaction problems, describe the underlying model, and present the state of the art in DisCSP research.
Poster Papers

Preprocessing Techniques for Distributed Constraint Optimization
Syed Muhammad Ali, Sven Koenig, Milind Tambe

Variable Ordering Heuristics Show Promise
J. Christopher Beck, Patrick Prosser, Richard J. Wallace

The Tractability of Global Constraints
Christian Bessiere, Emmanuel Hebrard, Brahim Hnich, Toby Walsh

Support Inference for Generic Filtering
Frederic Boussemart, Fred Hemery, Christophe Lecoutre, Sais Lakhdar

Strong Cost-based Filtering for Lagrange Decomposition Applied to Network Design
Wilhelm Cronholm and Farid Ajili

The Impact of AND/OR Search Spaces on Constraint Satisfaction and Counting
Rina Dechter and Robert Mateescu

A General Extension of Constraint Propagation for Constraint Optimization
Xiaofei Huang

How much backtracking does it take to color random graph? Rigorous results on heavy tails
Haixia Jia and Cristopher Moore

Doctoral Poster Papers

Synchronous, Asynchronous and Hybrid Algorithms for DisCSPs
Ismel Brito

Online Constraint Problem Solving
Alfio Vidotto

Iterative Forward Search Algorithm: Combining Local Search with Maintaining Arc Consistency and a Conflict-based Statistics
Tomas Muller

Programming Robotic Devices with a Timed Concurrent Constraint Language
María del Pilar Muñoz, Andrés René Hurtado

Solution Extraction with the Critical Path in Graphplan-based Optimal Temporal Planning
Tien Ba Dinh

Note: The Poster Papers and Doctoral Poster Papers will be introduced on Thursday afternoon and the Poster Session will be on Thursday evening.
System Demonstrations

Applying Constraint Satisfaction Techniques to 3D Camera Control
Owen Bourne and Abdul Sattar

Gas Pipeline Optimizer
Alexander Brodsky and X. Sean Wang

CRE2: A CP Application for Reconfiguring a Power Distribution Network for Power Losses Reduction
Juan Francisco Diaz, Gustavo Gutierrez, Carlos Alberto Olarte, Camilo Rueda

PLASMA
Jeremy Frank, Michael Iatauro, Conor McGann, Will Taylor

A Constraint-Based Planner Applied to Data Processing Domains
Keith Goldin and Wanlin Pang

CLab: a C++ Library for Fast Backtrack-free Interactive Product Configuration
Rune M. Jensen

A Constraint-Based System for Hiring and Managing Graduate Teaching Assistants
Ryan Lim, Venkata Praveen Guddeti, Berthe Y. Choueiry

A Web-Based Meeting Schedule Solver with Privacy Guarantees, without Trusted Servers
Marius-Calin Silaghi, Vaibhav Rajeshirke, Richard Wallace

A Constraint-Based Graphics Library for B-Prolog
Neng-Fa Zhou

Note: The System Demonstrations will be introduced on Thursday afternoon and the Demo Session will be on Thursday evening.

Doctoral Tutorials

How to review a paper
Boi Faltings, EPFL
17:00–17:50, Monday, September 27, 2004

Red Rackham’s Treasure
Pascal Van Hentenryck, Brown University
Doctoral Program Dinner
Tuesday, September 28, 2004

Abstract: This doctoral tutorial presents a personal perspective on the challenges and opportunities for the two years around the PhD defense. It also discusses how they relate to Darwin, blues, Kennedy and, of course, Red Rackham’s treasure.

How to manage your supervisor (and your career)
Toby Walsh, U. of New South Wales
14:00–14:50, Friday, October 1, 2004

Abstract: Learning to deal effectively with your supervisor will help you get your PhD and serve you well in your future career. Your supervisor is a valuable and time-scarce resource. He or she needs to be properly managed to ensure you get the maximum benefits. I will discuss some of the tactics that are often successful in dealing with a supervisor, as well as some of the pitfalls that can occur.
Map of Meeting Rooms