

CPAIOR 2010

Programme

DEIS – UNIVERSITA' DI BOLOGNA – Viale RISORGIMENTO, 2
14-18 June 2010

Monday 14 June 2010

Master Class on Experimental Study of Algorithms and Benchmarking

PART 1: 9.00 – 12.30

Room 6.1

9.00 – 10.30 **Invited Talk:** Catherine McGeoch, *Statistical Methods (I)*

10.30 – 11.00 Coffee break

11.00 – 12.30 **Invited Talk:** Catherine McGeoch, *Statistical Methods (II)*

12.30 – 14.00 Lunch

PART 2: 14.00 – 17.30

Room 6.1

14.00 – 15.30 **Invited Talk:** Carla Gomes, *Scientific Use of Experimentation (I)*

15.30 – 16.00 Coffee break

16.00 – 17.30 **Invited Talk:** Carla Gomes, *Scientific Use of Experimentation (II)*

Tuesday 15 June 2010

Master Class on Experimental Study of Algorithms and Benchmarking

PART 1: 9.00 – 12.30 Software Vendors

Room 6.1

9.30 – 10.00 Mehmet Dincbas, *Cosytec*
10.00 – 10.30 Matt Galati, *SAS*
10.30 – 11.00 Tobias Achterberg, *IBM*

11.00 – 11.30 Coffee break

11.30 – 12.00 Alex Meeraus (or substitute), *GAMS*
12.00 – 12.30 Susanne Heipcke, *FICO*
12.30 – 13.00 Ted Ralphs, *Lehigh Univ.*

13.00 – 14.30 Lunch

PART 2: 14.30 – 15.30 Software Vendors

Room 6.1

14.30 – 15.00 Mark Wallace or Peter Stuckey, *G12*
15.00 – 15.30 Paul Shaw, *IBM*

18:30 – 20:30 Welcome cocktail at San Giovanni in Monte, Piazza San Giovanni in Monte 2, Bologna

Workshops

WORKSHOP 3: Open Source Tools for Constraint Programming and Mathematical Programming

Room 6.2

9.00 – 9.30	Helmut Simonis and Paul Davern, <i>CP-VIZ: An Open Source Visualization Platform for CP</i>
9.30 – 10.00	Narendra Jussien and Jacob Feldman, <i>JSR-331: Java Constraint Programming API. (Early Draft Review)</i>
10.00 – 10.30	Thierry Benoist, Bertrand Estellon, Frederic Gardi, Karim Nouioua, <i>Toward Local Search Programming: LocalSolver 1.0</i>
10.30 – 11.00	Ignacio Castineiras and Fernando Saenz-Perez, <i>Integration of Glass-box Solvers into a Constraint Functional-Logic Programming system</i>
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11.00 – 11.30	Coffee break
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11.30 – 12.00	Peter Stuckey and Mark Wallace, <i>A Modelling Language and Solver Independent Interface Language</i>
12.00 – 12.30	Tobias Achterberg, Timo Berthold, and Stefan Heinz, <i>The Plugin Based Design of SCIP</i>
12.30 – 13.00	Yan Xu and Ted Ralphs, <i>ChiPPS: A Framework for Implementing Parallel Tree Search Algorithms</i>
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13.00 – 14.30	Lunch
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14.30 – 16.00	Discussion Session, <i>Part I</i>
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16.00 – 16.30	Coffee break
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14.30 – 16.00	Discussion Session, <i>Part II</i>

WORKSHOP 5: Constraint Reasoning and Optimization for Computational Sustainability

Room 5.6

- 10.00 – 10.10** Opening Remarks, Carla P. Gomes
- 10.10 – 10.35** Marco Gavanelli, Fabrizio Riguzzi, Michela Milano, and Paolo Cagnoli, *Logic-Based Decision Support for Strategic Environmental Assessment*
- 10.35 – 11.00** Jennifer Fernquist, Kellogg S. Booth, and Alan K. Mackworth, *Using Multi-touch Tabletops to Create and Compare Neighbourhood Designs that Satisfy Constraints*
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- 11.00 – 11.30** Coffee break
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- 11.30 – 11.55** Andreas Artmeier, Julian Haselmayr, Martin Leucker, and Martin Sachenbacher, *The Optimal Routing Problem in the Context of Battery-Powered Electric Vehicles*
- 11.55 – 12.20** Ronan LeBras, Theodoros Damoulas, John Gregoire, Ashish Sabharwal, Carla P. Gomes, and R. Bruce van Dover, *Computational Thinking for Material Discovery. Bridging Constraint Reasoning and Learning*
- 12.20 – 13.00** Open Discussion I (Topic TBD)
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- 13.00 – 14.15** Lunch
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- 14.15 – 14.40** Florent Arthaud and Serge Fenet, *Biodiversity Modeling and Optimisation in Pond Networks*
- 14.40 – 15.05** Barry O'Sullivan, Steven Keady, Enda Keane, Sandra Irwin, and John O'Halloran, *Datamining for Biodiversity Prediction in Forests*
- 15.05 – 15.30** Florence Piola, Soraya Rouifed, and Christine Solnon, *Using Constrained Optimization to Understand, Predict and Control Knotweed Spread*
- 15.30 – 15.55** Daniel Sheldon, Bistra Dilkina, Adam Elmachtoub, Ryan Finseth, Ashish Sabharwal, Jon Conrad, Carla Gomes, David Shmoys, Will Allen, Ole Amundsen, and Buck Vaughan, *Optimal Network Design for the Spread of Cascades*
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- 15.55 – 16.30** Coffee break
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- 16.30 – 17.00** Open Discussion II (Topic TBD)

WORKSHOP 1: Hybrid Methods for Nonlinear Combinatorial Problems

Room 5.4

- 14.00 – 14.50** **Invited talk:** Michel Rueher, (*topic TBD*)
- 15.00 – 15.30** Timo Berthold, Ambros M. Gleixner, Stefan Heinz, and Stefan Vigerske, *On the Computational Impact of MIQCP Solver Components*
- 15.30 – 16.00** Christian Bessiere, George Katsirelos, Nina Narodytska, Claude-Guy Quimper, and Toby Walsh, *Decomposition of the NValue constraint*
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- 16.00 – 16.30** Coffee break/discussion
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- 16.30 – 17.00** Cristiana Bragalli, Claudia D'Ambrosio, Jon Lee, Andrea Lodi, and Paolo Toth, *Practical Water Network Design by MINLP*
- 17.00 – 17.30** John N. Hooker and Tallys Yunes, *An Integrated Approach for Truss Structure Design*

WORKSHOP 2: Combinatorial Optimization for Embedded Syst. Design

Room 5.7

- 14.15 – 15.00** **Invited Talk:** Iuliana Bacivarov, (*topic TBD*)
- 15.00 – 15.20** Krzysztof Kuchcinski, *Graph Constraints in Embedded System Design*
- 15.20 – 15.40** Alessio Bonfietti, *Incremental Throughput Constraint for Synchronous Data-Flow Graphs*
- 15.40 – 16.00** Giuseppe Tagliavini, *A unified framework for optimal mapping of parallel applications on MPSoC platforms*
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- 16.00 – 16.30** Coffee break
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- 16.30 – 16.50** Enrico Bini, *Optimal Period Selection of a Real-Time Task Set*
- 16.50 – 17.10** Sergiu Carpov, *Memory bandwidth-constrained parallelism dimensioning for embedded many-core microprocessors*
- 17.10 – 17.30** Zdravko Karakehayov, *Optimal Clock Rate Control for Energy-Aware Embedded Systems*

WORKSHOP 4: Bin Packing and Placement Constraints

Room 5.5

- 14.30 – 15.00** Laure Devendeville, Serge Dumont, Olivier Goubet and Sylvain Lefebvre, *Algorithms for Constrained Best-Fit Alignment*
- 15.00 – 15.30** Cédric Pinto and Stéphane Grandcolas, *A SAT encoding for Multi-dimensional Packing Problems*
- 15.30 – 16.00** Helmut Simonis and Tarik Hadzic, *An Energy Cost Aware Cumulative*
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- 16.00 – 16.30** Coffee break
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- 16.30 – 17.00** Cláudio Alves, Rita Macedo and José Valério de Carvalho, *Solving the pattern minimization problem with branch-and-price and constraint programming*
- 17.00 – 17.30** Hadrien Cambazard and Barry O'Sullivan, *A Study of Lower Bounds based on Dynamic Programming for Bin Packing*
- 17.30 – 18.00** Nikolaus Furian and Siegfried Vössner, *Constrained Order Packing-Comparison of Heuristic Approaches for a New Bin Packing Problem*

Wednesday 16 June 2010

8.30 – 9.00 Registration

9.00 – 9.15 Opening

SESSION 1: 9.15 – 11.00

Room 6.1

9.15 – 10.15 **Invited Talk:** Matteo Fischetti, *Toward a MIP-Cut Metascheme*

10.15 – 10.45 Geoffrey Chu, Peter J. Stuckey and Maria G. de la Banda, *Automatically Exploiting Subproblem Equivalence in Constraint Programming*

10.45 – 11.00 Timo Berthold, Thibaut Feydy and Peter J. Stuckey, *Rapid Learning for Binary Programs*

11.00 – 11.30 Coffee break

SESSION 2: 11.30 – 13.00

Room 6.1

11.30 – 12.00 Alessandro Zanarini and Gilles Pesant, *More Robust Counting-Based Search Heuristics with Alldifferent Constraints*

12.00 – 12.30 Siddhartha Jain, Serdar Kadioglu and Meinolf Sellmann, *Upper Bounds on the Number of Solutions of Binary Integer Programs*

12.30 – 12.45 Zeynep Kiziltan and Jacopo Mauro, *Service-Oriented Volunteer Computing for Massively Parallel Constraint Solving Using Portfolios*

12.45 – 13.00 Feng Xie and Andrew Davenport, *Massively parallel constraint programming for supercomputers: challenges and initial results*

13.00 – 14.15 Lunch

SESSION 3: 14.15 – 16.00**Room 6.1**

- 14.15 – 14.45** Frank Hutter, Holger Hoos and Kevin Leyton-Brown, *Automated Optimization of Mixed Integer Programming Solvers*
- 14.45 – 15.15** Quang Dung Pham, Yves Deville and Pascal Van Hentenryck, *Constraint-Based Local Search for Constrained Optimum Paths Problems*
- 15.15 – 15.45** Madjid Khichane, Patrick Albert and Christine Solnon, *Strong Combination of Ant Colony Optimization with Constraint Programming Optimization*
- 15.45 – 16.00** Thierry Benoist, *Characterization and Automation of Matching Based Neighborhoods*

16.00 – 16.30 Coffee break

SESSION 4: 16.30 – 18.15**Room 6.1**

- 16.30 – 17.00** Shiva Kasiviswanathan and Feng Pan, *Matrix Interdiction Problem*
- 17.00 – 17.30** Diarmuid Grimes and Emmanuel Hebrard, *Job shop scheduling with setup times and maximal time-lags: A simple constraint programming approach*
- 17.30 – 17.45** Kanika Dhyani, Stefano Gualandi and Paolo Cremonesi, *A Constraint Programming Approach for the Service Consolidation Problem*
- 17.45 – 18.00** Elvin Coban and John Hooker, *Single-Facility Scheduling over Long Time Horizons by Logic-based Benders Decomposition*
- 18.00 – 18.15** Jens Schulz, Timo Berthold, Stefan Heinz, Marco E. Lübbecke and Rolf H. Möhring, *A Constraint Integer Programming Approach for Resource-Constrained Project Scheduling*

Thursday 17 June 2010

SESSION 1: 9.00 – 10.45

Room 6.1

- 9.00 – 10.00** **Invited Talk:** Carla Gomes, *Challenges for CPAIOR in Computational Sustainability*
- 10.00 – 10.30** Anna Moss, *Constraint Programming with Arbitrarily Large Integer Variables*
- 10.30 – 10.45** Emmanuel Hebrard, Eoin O'Mahony and Barry O'Sullivan, *Constraint Programming and Combinatorial Optimisation in Numberjack*
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- 10.45 – 11.15** Coffee break
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SESSION 2: 11.15 – 13.00

Room 6.1

- 11.15 – 11.45** Pascal Van Hentenryck, Russell Bent and Carleton Coffrin, *Strategic Planning for Disaster Recovery with Stochastic Last Mile Distribution*
- 11.45 – 12.15** Hadrien Cambazard, Eoin O'Mahony and Barry O'Sullivan, *Hybrid Methods for the Multileaf Collimator Sequencing Problem*
- 12.15 – 12.45** Bistra Dilkina and Carla Gomes, *Solving Connected Subgraph Problems in Wildlife Conservation*
- 12.45 – 13.00** Canan Gunes, Willem-Jan van Hoeve and Sridhar Tayur, *Vehicle Routing for Food Rescue Programs: A comparison of different approaches*
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- 13.00 – 14.15** Lunch
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SESSION 3: 14.15 – 16.00**Room 6.1**

- 14.15 – 14.45** Nicolas Beldiceanu, Mats Carlsson, Pierre Flener and Justin Pearson, *On Matrices, Automata and Double Counting*
- 14.45 – 15.15** Nicolas Beldiceanu, Fabien Hermenier, Xavier Lorca and Thierry Petit, *The Increasing NValue Constraint*
- 15.15 – 15.30** Stéphane Grandcolas and Cédric Pinto, *A SAT encoding for Multi-dimensional Packing Problems*
- 15.30 – 15.45** Jean-Charles Regin, Louis-Martin Rousseau, Michel Rueher and Willem-Jan Van Hoeve, *The Weighted Spanning Tree Constraint Revisited*
- 15.45 – 16.00** Julien Dupuis, Pierre Schaus and Yves Deville, *Consistency check for the bin packing constraint revisited*

16.00 – 16.30 Coffee break

SESSION 4: 16.30 – 17.15**Room 6.1**

- 16.30 – 17.00** Aya Saad, Carmen Gervet and Slim Abdennadher, *Constraint Reasoning with Uncertain Data using CDF-Intervals*
- 17.00 – 17.15** Steve Prestwich, Armagan Tarim, Roberto Rossi and Brahim Hnich, *Stochastic Constraint Programming by Neurevolution With Filtering*

18.15 Excursion in the city center

20.30 Gala dinner at Restaurant 'La Capriata', Strada Maggiore 19 - Corte Isolani 1/e, Bologna

Friday 18 June 2010

SESSION 1: 9.00 – 10.45

Room 6.1

- 9.00 – 10.00** **Invited Talk:** Peter Stuckey, *Lazy Clause Generation: Combining the Power of SAT and CP (and MIP?) Solving*
- 10.00 – 10.30** Matteo Fischetti and Domenico Salvagnin, *A Relax-and-Cut Framework for Gomory Mixed-Integer Cut*
- 10.30 – 10.45** Pierre Schaus, Pascal Van Hentenryck and Alessandro Zanzarini, *Revisiting the soft global cardinality constraint*
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- 10.45 – 11.15** Coffee break

SESSION 2: 11.15 – 13.00

Room 6.1

- 11.15 – 11.45** Stefano Gualandi, Federico Malucelli and Domenico Sozzi, *On the Design of the Next Generation Access Networks*
- 11.45 – 12.15** Justin Yip, Pascal Van Hentenryck and Carmen Gervet, *Boosting Set Constraint Propagation for Network Design*
- 12.15 – 12.30** Andrew Davenport, *Integrated maintenance scheduling for semiconductor manufacturing*
- 12.30 – 12.45** Matteo Fischetti and Domenico Salvagnin, *An in-out approach to disjunctive optimization*
- 12.45 – 13.00** Pascal Benchimol, Jean-Charles Regin, Louis-Martin Rousseau, Michel Rueher and Willem-Jan van Hoes, *Improving the Held and Karp Bound with Constraint Programming*