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Nota di contenuto	Invited Paper -- Using MILP and CP for the Scheduling of Batch Chemical Processes -- Technical Papers -- SIMPL: A System for Integrating Optimization Techniques -- A New Exact Solution Algorithm for the Job Shop Problem with Sequence-Dependent Setup

Times -- Simple Rules for Low-Knowledge Algorithm Selection -- Filtering Algorithms for the Same Constraint -- Cost Evaluation of Soft Global Constraints -- SAT-Based Branch & Bound and Optimal Control of Hybrid Dynamical Systems -- Solving the Petri Nets Reachability Problem Using the Logical Abstraction Technique and Mathematical Programming -- Generating Benders Cuts for a General Class of Integer Programming Problems -- A Constraint Programming Model for Tail Assignment -- Super Solutions in Constraint Programming -- Local Probing Applied to Network Routing -- Dynamic Heaviest Paths in DAGs with Arbitrary Edge Weights -- Filtering Methods for Symmetric Cardinality Constraint -- Arc-Consistency Filtering Algorithms for Logical Combinations of Constraints -- Combining Forces to Solve the Car Sequencing Problem -- Travelling in the World of Local Searches in the Space of Partial Assignments -- A Global Constraint for Nesting Problems -- Models and Symmetry Breaking for 'Peaceable Armies of Queens' -- A Global Constraint for Graph Isomorphism Problems -- Echelon Stock Formulation of Arborescent Distribution Systems: An Application to the Wagner-Whitin Problem -- Scheduling Abstractions for Local Search -- $O(n \log n)$ Filtering Algorithms for Unary Resource Constraint -- Problem Decomposition for Traffic Diversions -- Short Papers -- LP Relaxations of Multiple all-different Predicates -- Dispatching and Conflict-Free Routing of Automated Guided Vehicles: A Hybrid Approach Combining Constraint Programming and Mixed Integer Programming -- Making Choices Using Structure at the Instance Level within a Case Based Reasoning Framework -- The Challenge of Generating Spatially Balanced Scientific Experiment Designs -- Building Models through Formal Specification -- Stabilization Issues for Constraint Programming Based Column Generation -- A Hybrid Branch-And-Cut Algorithm for the One-Machine Scheduling Problem.

Sommario/riassunto

This volume contains the proceedings of the First International Conference on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimisation Problems. This new conference follows the series of CP-AI-OR International Workshops on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimisation Problems held in Ferrara (1999), Paderborn (2000), Ashford (2001), Le Croisic (2002), and Montreal (2003). The success of the previous workshops has demonstrated that CP-AI-OR is becoming a major forum for exchanging ideas and methodologies from both fields. The aim of this new conference is to bring together researchers from AI and OR, and to give them the opportunity to show how the integration of techniques from AI and OR can lead to interesting results on large scale and complex problems. The integration of techniques from Artificial Intelligence and Operations Research has provided effective algorithms for tackling complex and large scale combinatorial problems with significant improvements in terms of efficiency, scalability and optimality. The benefit of this integration has been shown in applications such as hoist scheduling, rostering, dynamic scheduling and vehicle routing. At the programming and modelling levels, most constraint languages embed OR techniques to reason about collections of constraints, so-called global constraints. Some languages also provide support for hybridization allowing the programmer to build new integrated algorithms. The resulting multi-paradigm programming framework combines the flexibility and modelling facilities of Constraint Programming with the special purpose and efficient methods from Operations Research.
