Youssef Hamadi, Lakhdar Sais (Eds.)

Handbook of Parallel Constraint Reasoning

- **Editors and authors world-leading researchers in this domain**
- **Suitable for researchers, practitioners and graduate students engaged with constraint-based reasoning**
- **First part addresses theory and algorithms, second part tools and applications**

This is the first book presenting a broad overview of parallelism in constraint-based reasoning formalisms. In recent years, an increasing number of contributions have been made on scaling constraint reasoning thanks to parallel architectures. The goal in this book is to overview these achievements in a concise way, assuming the reader is familiar with the classical, sequential background. It presents work demonstrating the use of multiple resources from single machine multi-core and GPU-based computations to very large scale distributed execution platforms up to 80,000 processing units. The contributions in the book cover the most important and recent contributions in parallel propositional satisfiability (SAT), maximum satisfiability (MaxSAT), quantified Boolean formulas (QBF), satisfiability modulo theory (SMT), theorem proving (TP), answer set programming (ASP), mixed integer linear programming (MILP), constraint programming (CP), stochastic local search (SLS), optimal path finding with A*, model checking for linear-time temporal logic (MC/LTL), binary decision diagrams (BDD), and model-based diagnosis (MBD). The book is suitable for researchers, graduate students, advanced undergraduates, and practitioners who wish to learn about the state of the art in parallel constraint reasoning.

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