



Contacts

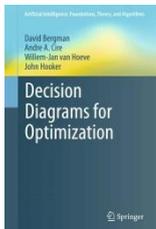
We welcome proposals for new projects – please send them to the series editors or to Ronan Nugent, Springer Computer Science (ronan.nugent@springer.com)

Overview

Books published in this series focus on the theory and computational foundations of artificial intelligence, ideally combining a mathematically rigorous treatment of a contemporary topic in artificial intelligence with an appreciation of the relevant computational issues such as algorithmic foundations or complexity theoretic analysis. Submitted proposals should be coherent monographs, rather than collections of articles. Authoritative surveys and expositions of advanced topics are welcomed. The intended readership is research students and researchers seeking an authoritative treatment of an advanced topic in the foundations of artificial intelligence.

Topics considered include AI and operations research; constraint systems and satisfiability; knowledge representation and reasoning; machine learning and data mining; multiagent systems and economic models in AI; planning and scheduling; preferences, utility, and decision-making; robotics and vision; search algorithms; and uncertainty handling.

Selected Published Titles

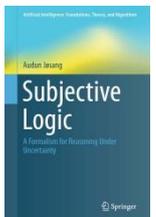


Decision Diagrams for Optimization

[978-3-319-42847-5](https://doi.org/10.1007/978-3-319-42847-5)

David Bergman, Andre A. Cire, Willem-Jan van Hoeve, John N. Hooker

Introduces a novel approach to discrete optimization, providing both theoretical insights and algorithmic developments that lead to improvements over state-of-the-art technology. Presents chapters on the use of decision diagrams for combinatorial optimization and constraint programming, with attention to general-purpose solution methods as well as problem-specific techniques. Useful for researchers and practitioners in discrete optimization and constraint programming.



Subjective Logic: A Formalism for Reasoning Under Uncertainty

[978-3-319-42335-7](https://doi.org/10.1007/978-3-319-42335-7)

Audun Jøsang

First comprehensive treatment of subjective logic and all its operations. Author explains subjective opinions, opinion representation, and decision-making under vagueness and uncertainty, then offers a full definition of subjective logic, harmonising the key notations and formalisms, concluding with chapters on trust networks and subjective Bayesian networks. Book will help researchers and practitioners to advance, improve and apply subjective logic to build powerful artificial reasoning models and tools for solving real-world problems.

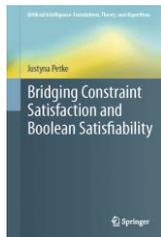


Hybrid Metaheuristics: Powerful Tools for Optimization

[978-3-319-30882-1](#)

Christian Blum, Günther R. Raidl

Explains the most prominent and some promising new, general techniques that combine metaheuristics with other optimization methods. A first introductory chapter reviews the basic principles of local search, prominent metaheuristics, and tree search, dynamic programming, mixed integer linear programming, and constraint programming for combinatorial optimization purposes. Then presents five generally applicable hybridization strategies, with exemplary case studies on selected problems: incomplete solution representations and decoders; problem instance reduction; large neighborhood search; parallel non-independent construction of solutions within metaheuristics; and hybridization based on complete solution archives. Authors are leading researchers in the hybridization of metaheuristics with other techniques for optimization, and their work reflects the broad shift to problem-oriented rather than algorithm-oriented approaches, enabling faster and more effective implementation in real-life applications.

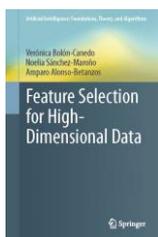


Bridging Constraint Satisfaction and Boolean Satisfiability

[978-3-319-21809-0](#)

Justyna Petke

Provides a significant step towards bridging the areas of Boolean satisfiability and constraint satisfaction by answering the question why SAT-solvers are efficient on certain classes of CSP instances which are hard to solve for standard constraint solvers. Author also gives theoretical reasons for choosing a particular SAT encoding for several important classes of CSP instances.

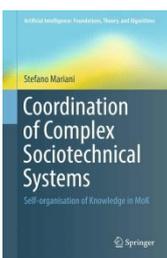


Feature Selection for High-Dimensional Data

[978-3-319-21857-1](#)

Verónica Bolón-Canedo, Noelia Sánchez-Marroño, Amparo Alonso-Betanzos

Coherent and comprehensive approach to feature subset selection in the scope of classification problems, explaining the foundations, real application problems and the challenges of feature selection for high-dimensional data. Useful for practitioners, researchers and graduate students in the areas of machine learning and data mining.



Coordination of Complex Sociotechnical Systems: Self-organisation of Knowledge in MoK

[978-3-319-47108-2](#)

Stefano Mariani

Covers distributed, self-organising, and pervasive systems. A chemistry-inspired model of coordination, a situated architecture and coordination language, and a cognitive model of interaction are the ingredients of the Molecules of Knowledge (MoK) model for self-organisation of knowledge. Author describes some case studies in the fields of collaborative systems, academic research, and citizen journalism.

Selected Planned Titles

Stefan Edelkamp – Algorithmic Intelligence: Algorithmic Foundations of Artificial Intelligence

Nardine Osman (ed.) – Applications of Electronic Institutions

Fabio Cuzzolin – The Geometry of Uncertainty: The Geometry of Imprecise Probabilities

Paula Boddington – Towards a Code of Ethics for Artificial Intelligence



<http://www.springer.com/series/13900>

Artificial Intelligence: Foundations, Theory, and Algorithms

Series Editors: O'Sullivan, B.; Wooldridge, M.

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