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Descrizione fisica	1 online resource (xxi, 687 pages) : digital, PDF file(s)
Collana	Encyclopedia of mathematics and its applications
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Fundamental concepts and applications -- Boolean equations -- Prime implicants and minimal DNFs / Peter L. Hammer and Alexander Kogan -- Duality theory / Yves Crama and Kazuhisa Makino -- Quadratic functions / Bruno Simeone -- Horn functions / Endre Boros -- Orthogonal forms and shellability -- Regular functions -- Threshold functions -- Red-once functions / Martin C. Golumbic and Vladimir Gurvich -- Characterizations of special classes by functional equations / Lisa Hellerstein -- Partially defined Boolean functions / Toshihide Ibaraki -- Pseudo-Boolean functions -- Graphs and hypergraphs -- Algorithmic complexity -- JBool : a software tool / Claude Benzaken and Nadia Brauner.
Sommario/riassunto	Written by prominent experts in the field, this monograph provides the first comprehensive, unified presentation of the structural, algorithmic

and applied aspects of the theory of Boolean functions. The book focuses on algebraic representations of Boolean functions, especially disjunctive and conjunctive normal form representations. This framework looks at the fundamental elements of the theory (Boolean equations and satisfiability problems, prime implicants and associated short representations, dualization), an in-depth study of special classes of Boolean functions (quadratic, Horn, shellable, regular, threshold, read-once functions and their characterization by functional equations) and two fruitful generalizations of the concept of Boolean functions (partially defined functions and pseudo-Boolean functions). Several topics are presented here in book form for the first time. Because of the depth and breadth and its emphasis on algorithms and applications, this monograph will have special appeal for researchers and graduate students in discrete mathematics, operations research, computer science, engineering and economics.