1. Record Nr.   UNISA996479368403316

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   Titolo   Logic Functions and Equations [[electronic resource]] : Fundamentals and Applications using the XBOOLE-Monitor / / by Bernd Steinbach, Christian Posthoff

   Pubbl/distr/stampa   Cham : , , : Springer International Publishing : , , : Imprint : Springer, , 2022

   ISBN   3-030-88945-9

   Edizione   [3rd ed. 2022.]

   Descrizione fisica   1 online resource (818 pages)

   Disciplina   511.324

   Soggetti   Electronic circuits
                        Logic design
                        Computer science - Mathematics
                        Discrete mathematics
                        Electronic Circuits and Systems
                        Logic Design
                        Discrete Mathematics in Computer Science
                        Àlgebra de Boole
                        Lògica matemàtica
                        Teoria de màquines
                        Llibres electrònics

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Note generali   Description based upon print version of record.

   Nota di bibliografia Includes bibliographical references and index.

   Nota di contenuto   Part I Theoretical Foundations -- 1. Basic Algebraic Structures -- 2. Logic Functions -- 3. Logic Equations -- 4. Boolean Differential Calculus -- 5. Sets, Lattices, and Classes of Logic Functions -- Part II Applications -- 6. Logic, Arithmetic, and Special Functions -- 7. SAT-Problems -- 8. Extremely Complex Problems -- 9. Combinational Circuits -- 10. Sequential Circuits -- References -- Index.

   Sommario/riassunto   The greatly expanded and updated 3rd edition of this textbook offers the reader a comprehensive introduction to the concepts of logic functions and equations and their applications across computer science and engineering. The authors' approach emphasizes a thorough

understanding of the fundamental principles as well as numerical and computer-based solution methods. The book provides insight into applications across propositional logic, binary arithmetic, coding, cryptography, complexity, logic design, and artificial intelligence. Updated throughout, some major additions for the 3rd edition include: a new chapter about the concepts contributing to the power of XBOOLE; a new chapter that introduces into the application of the XBOOLE-Monitor XBM 2; many tasks that support the readers in amplifying the learned content at the end of the chapters; solutions of a large subset of these tasks to confirm learning success; challenging tasks that need the power of the XBOOLE software for their solution. The XBOOLE-monitor XBM 2 software is used to solve the exercises; in this way the time-consuming and error-prone manipulation on the bit level is moved to an ordinary PC, more realistic tasks can be solved, and the challenges of thinking about algorithms leads to a higher level of education.