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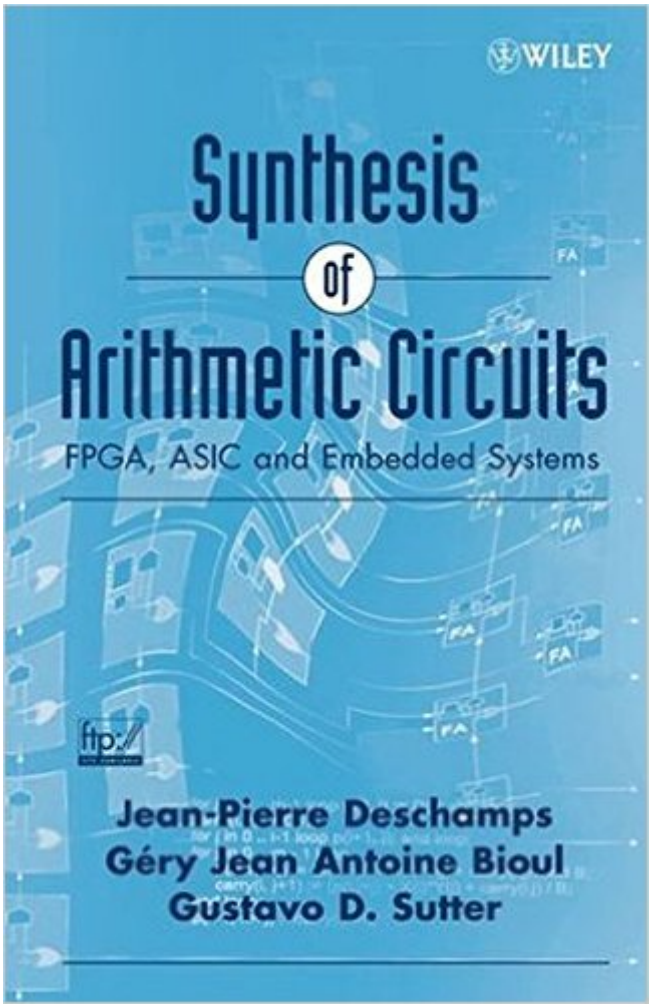
Synthesis Of Arithmetic Circuits: FPGA, ASIC And Embedded Systems



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Synopsis

A new approach to the study of arithmetic circuits In Synthesis of Arithmetic Circuits: FPGA, ASIC and Embedded Systems, the authors take a novel approach of presenting methods and examples for the synthesis of arithmetic circuits that better reflects the needs of today's computer system designers and engineers. Unlike other publications that limit discussion to arithmetic units for general-purpose computers, this text features a practical focus on embedded systems. Following an introductory chapter, the publication is divided into two parts. The first part, Mathematical Aspects and Algorithms, includes mathematical background, number representation, addition and subtraction, multiplication, division, other arithmetic operations, and operations in finite fields. The second part, Synthesis of Arithmetic Circuits, includes hardware platforms, general principles of synthesis, adders and subtractors, multipliers, dividers, and other arithmetic primitives. In addition, the publication distinguishes itself with: * A separate treatment of algorithms and circuits-a more useful presentation for both software and hardware implementations * Complete executable and synthesizable VHDL models available on the book's companion Web site, allowing readers to generate synthesizable descriptions * Proposed FPGA implementation examples, namely synthesizable low-level VHDL models for the Spartan II and Virtex families * Two chapters dedicated to finite field operations This publication is a must-have resource for students in computer science and embedded system designers, engineers, and researchers in the field of hardware and software computer system design and development. An Instructor Support FTP site is available from the Wiley editorial department.

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Customer Reviews

Jean-Pierre Deschamps lives in an interesting region bounded by embedded systems, math circuits, cryptography and field programmable devices. His tools of choice are FPGA, ASIC and VHDL. The intersection area of all three of his most powerful and current books is the transition from already planned algorithms to circuits. There is enough breadth and depth to provide both a reference for practicing EE’s and students in these specific areas. What you don’t get in any of his books are specific algorithms.Jean-Pierre uses more of a "here is the general structure of the algorithm" with practical tips on steps and stages rather than complete specs, for what I’d call "pseudo algos" much like pseudo code. However, in this case there are many details on how the basic functions TRANSLATE both to algorithms, and especially circuits, including downloadable circuit diagrams in many areas.His most important contributions include:Guide to FPGA Implementation of Arithmetic Functions (Lecture Notes in Electrical Engineering)Synthesis of Arithmetic Circuits: FPGA, ASIC and Embedded Systems

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