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Autore	Meyer-Baese U (Uwe), <1964->
Titolo	Embedded Microprocessor System Design using FPGAs / / by Uwe Meyer-Baese
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Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (XVI, 509 p. 210 illus., 152 illus. in color.)
Disciplina	004.16
Soggetti	Electronic circuits
	Cooperating objects (Computer systems)
	Microprocessors
	Computer architecture
	Electronic Circuits and Systems
	Cyber-Physical Systems
	Processor Architectures
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Embedded Microprocessor Systems Basics -- FPGA Devices, Boards, and Design Tools -- Microprocessor Component Design in VHDL -- Microprocessor Component Design in Verilog -- Microprocessor Programming in C/C++ -- Software Tools for Embedded Microprocessors Systems -- Design of the PicoBlaze Softcore Microprocessor -- Software tools for the PicoBlaze Softcore Microprocessor -- Altera/Intel Nios Embedded Microprocessor -- Xilinx MicroBlaze Embedded Microprocessor -- ARMv7 Cortex-A9 Embedded Microprocessor.
Sommario/riassunto	This textbook for courses in Embedded Systems introduces students to necessary concepts, through a hands-on approach. It gives a great introduction to FPGA-based microprocessor system design using state-of-the-art boards, tools, and microprocessors from Altera/Intel® and Xilinx®. HDL-based designs (soft-core), parameterized cores (Nios II and MicroBlaze), and ARM Cortex-A9 design are discussed, compared and explored using many hand-on designs projects. Custom IP for

HDMI coder, Floating-point operations, and FFT bit-swap are developed, implemented, tested and speed-up is measured. Downloadable files include all design examples such as basic processor synthesizable code for Xilinx and Altera tools for PicoBlaze, MicroBlaze, Nios II and ARMv7 architectures in VHDL and Verilog code, as well as the custom IP projects. Each Chapter has a substantial number of short quiz questions, exercises, and challenging projects. Explains soft, parameterized, and hard core systems design tradeoffs; Demonstrates design of popular KCPSM6 8 Bit microprocessor step-by-step; Discusses the 32 Bit ARM Cortex-A9 and a basic processor is synthesized; Covers design flows for both FPGA Market leaders Nios II Altera/Intel and MicroBlaze Xilinx system; Describes Compiler-Compiler Tool development; Includes a substantial number of Homework's and FPGA exercises and design projects in each chapter.